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Children's Perspectives of Primary School Environments

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BArch DipArch MArch ARB

Thesis submitted to the University of Nottingham for the

Degree of Doctor of Philosophy

August 2017

Abstract

It has been recognised for many years that children learn from direct experiences with their surrounding environments (Weinstein and David, 1987). Considering children spend the majority of their early lives occupying school buildings, the quality of this built environment is important as it is thought to have an impact on their learning, social development and well-being. The architectural design of school environments, procured over the past 15 years has been constantly evolving with the need for new and improved school buildings coupled with significant changes in education over the past few decades.

In the UK, during the 2000s, there was significant investment in the Building Schools for the Future (BSF) programme, with a desire to achieve high quality inspirational environments that enhance learning (DfES, 2003c), where design quality was considered an important factor to address issues of sustainability, flexibility and adaptability (DfES, 2002b). As such, there has been significant research undertaken into school design, which has found that certain elements of the environment may have an impact on learning and achievement. However, a change in government in 2010 led to the existing school building programmes at the time being axed and the Priority School Building Programme (PSBP) being introduced in 2011, with baseline design guidelines and the aim to make school construction more cost-effective (National Audit Office, 2017). During the economic downturn, it became apparent that some elements of school design were being omitted to reduce building costs. Considering the current situation, this poses the question: what impact does the latest wave of school buildings have on the users and their experiences in these new settings? Optimising the design of school buildings remains important, and in order to achieve this, we need to examine some of our existing and recently constructed school buildings.

This thesis reviews the current situation by investigating the impact of 'new' primary school buildings on children's experiences and their daily lives at school, conducting a post-occupancy investigation of four case study schools. The qualitative research targeted the end-users, the children themselves, by exploring their views on their schools. The research also highlights the potential of participatory techniques through

use of creative methods, providing an understanding of primary school buildings through the children's eyes, giving them a voice within the research. The findings identify that, from the children's perspective, new primary schools are to an extent, providing sufficient spaces in which to learn. However, it remains that there are some environmental issues which are affecting children. The importance of the holistic school environment has been highlighted as well as desirable spaces and places for children at school, with an emphasis on outdoor spaces and the natural environment. By providing insights into their daily experiences, the findings suggest that such spaces ought to be considered higher priority in the design process.

The research aims to set a precedent for architects and designers, providing an insight into four post-occupancy case studies, whilst looking forward to integrating participatory techniques in future school evaluation and design. By enriching existing knowledge in the area of school environments, it provides fresh information that will continue to aid the future design of schools by architects, which ultimately, has the potential to have a positive impact on development and well-being.

Acknowledgements

There have been many people who have contributed to this research journey, either directly or indirectly, and I would like to express my gratitude to each and every one who may have imparted knowledge along the way. I would like to thank my supervisors; Professor Tim Heath and Dr Peter Rutherford, for their time, guidance, constructive criticism and encouragement throughout the process.

I am grateful for the Children and Childhood Network and the Department of Architecture and the Built Environment, at the University of Nottingham, for giving me the opportunity to conduct this research on a subject matter that is close to my heart. During the course of this thesis I have been very fortunate to tutor architecture students and to travel to South Africa, to assist with building two pre-schools. I would like to thank all of the staff and students that were involved in the projects. Although these construction projects were not directly related to this thesis, the whole experience, the numerous conversations had and the challenges we faced, I know have contributed to my journey in many ways.

I would also like to thank Nottingham Trent University for inviting me to tutor on their Architecture and Interior Architecture and Design courses, which has been a fulfilling experience and a refreshing break from the research at times.

I would like to thank the architects at Nottinghamshire County Council and consultants who gave up their time to talk to me about school projects and initiated contact with the schools involved in this research. I am also very appreciative for a number of conversations I have had with architects and ex-colleagues about my research.

I am so grateful to all of the schools involved in this research. Thank you to all of the staff members who have been accommodating and made me feel welcome whilst planning and conducting the fieldwork. Thank you to all of the children who have been involved in this research; you have made this research an enjoyable experience, also keeping me entertained and on my toes at times!

And last but not least, I would like to thank all of my friends and family. Thank you to my colleagues who have undergone this process with me, your support, advice and encouragement has been invaluable and I know we will remain friends for life. To my

mother, Elizabeth; my father, Cliff; my sisters and their partners, Chloë and Dave, Holly and Josh; thank you so much for your support and continued encouragement throughout the journey. Finally, to my husband, Gareth, thank you for your patience, your emotional and moral support; thank you for everything, without you, this thesis would not have been possible.

Preamble: Motivations of the author

Having trained and qualified as an architect, I have always had an interest in how the built environment can have a profound impact on people occupying and inhabiting spaces. Whilst working in practice, from 2008 - 2013, I worked on a wide range of building typologies, in both the UK and internationally, including: public buildings, residential schemes, healthcare projects and schools. During the course of this experience, it became more obvious to me how elements of architectural details and specifications can have huge implications for users' experiences in those buildings, in both positive and negative ways. Every decision made as an architect can have some form of impact on the users: the placement of a column, the height of a hand dryer, the colour of a wall, etc. It seemed strange to me, that when undertaking value-engineering on projects, elements of the design can be omitted, with little assessment of how these changes might have implications for the users. I also felt we should be assessing what our designs have achieved once the buildings are inhabited. Knowledge about newly constructed buildings tended to be obtained through ad-hoc discussions with clients rather than formal evaluation procedures; at the time, the RIBA Plan of Work 2007[1] did not explicitly instruct post-occupancy evaluations. However, I believe that we, as architects can, and should, learn about successes and mistakes in buildings, by consulting more often with the people that occupy them.

Over the past four years, undertaking this thesis has provided me with opportunities to fulfil two of my passions: research and teaching. I have taught for over six years on architecture degree courses at various universities. Therefore, I feel that I can relate to some of teachers' experiences in school buildings. During my time teaching in schools of architecture, my own personal experiences of the different environments have also been intriguing; for example, when working in a brand-new building compared to more out-dated facilities. How did these environments make students feel and did this have any impact on their learning? They certainly had impacts on my own feelings whilst working in those spaces.

Additionally, I have worked in primary schools with children, including a period of work experience and several outreach projects. More recently, I have organised and

[1] RIBA Plan of Work 2013 now includes reference to post-occupancy evaluations.

facilitated the Nottingham and Derby Society of Architects (RIBA) architectural design competition in schools, organising and running workshops with children and architects. Conducting architectural workshops with children in primary schools highlights how perceptive children are of their environments and their imaginative designs concentrate on the tiniest of details. I believe that the detailed information that children absorb could be incredibly useful in design.

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Chapter 1

Introduction

1 Introduction

1.1 Introduction

This chapter provides the introduction to the thesis, describing the background and research context, the rationale behind the study, the research aims and objectives and the scope of the research study. The structure of the thesis is also outlined.

1.2 Background and rationale for the research

> *"School buildings matter. They are places where every child is encouraged to reach or exceed his or her potential. In that sense, they are the very foundation of the future social, cultural and economic well-being of our country…there is a deep connection between achieving these noble outcomes and designing the setting in which they are taught"*
>
> *Foreword by Stephen Hodder cited in 'Future Schools', Mirchandani and Wright (2015 p.viii)*

The construction of school buildings in the UK has been implemented through a series of fragmented periods such as the Victorian era, the post-war building boom and the significant investment into school building programmes during the 2000's. In the introductory quote above, Stephen Hodder, RIBA President in 2015, suggests why schools are important, in the broad sense of children realising their potential as learners and becoming responsible citizens. OFSTED and DCSF (2008 p.4) have outlined that the role of the school is wider than its function of providing education: "schools are concerned with the development of the whole child and young person". Importantly, they provide the setting in which children are socially developing and acquiring skills they require for life. Furthermore, White (2002 p.442) proposes that schools also aim to assist children in leading "flourishing lives" and ensuring personal well-being. Therefore, a school is all encompassing, more than just a place for education; it is a "living venue" for learning, for play (Walden, 2015 p.6) and social interactions, and can also form a mesh to the surrounding community.

A need for new and improved school buildings and significant changes in education over several decades has encouraged research to be carried out into the area of school environments and their potential impact on children's learning and education (Darmody and Smyth, 2012). Children spend the majority of their early lives occupying school buildings and the quality of the educational environment has been found to be linked to other areas of their development as well as learning. Growing research over several decades has highlighted the potential impact of the physical built environment on learning outcomes in these settings (Leiringer and Cardellino, 2011), including the effects on mood, motivation, attainment and well-being (For example: Tanner, 2000, Fisher, 2001, Clark, 2002, Feilden, 2004, Green and Turrell, 2005, Higgins et al., 2005b, Darmody and Smyth, 2012).

As Dudek (2007) notes, the effects of radical changes in education on children and young people cannot be underestimated, highlighting the impact on all users of school buildings and "the need for supportive multi-functioning environments of the highest quality" (Dudek, 2007 p.xiv). There exists a wide body of research and evidence that posits a relationship between the physical environment and learning and academic achievement (Hebert, 1998, Tanner, 2000, Higgins et al., 2005b, Barrett et al., 2012, Darmody and Smyth, 2012). Though, it is not always definitive, as it is a difficult area to explore in terms of assessing the true impact, due to the multi-faceted nature of the topic (Higgins et al., 2005b). However, there is evidence to suggest the impact of elements of the environment; for example, inappropriate temperature in the classroom, poor lighting, poor acoustics and poor air quality can have detrimental effects on teachers and pupils (Higgins et al., 2005b). Furthermore, Leiringer and Cardellino (2011) reinforce the importance of a link between design and pedagogy, suggesting how the design of school buildings may support approaches to teaching and education.

There have been substantial developments in the UK (and elsewhere) in the construction of new and refurbished school buildings. Major school building programmes have been introduced over the last 15 years including: The *Building Schools for the Future* programme from 2003, complemented by the *Primary Capital Programme* from 2008; these programmes were subsequently replaced by the *Priority School Building Programme* from 2011. As school design has undergone this rapid transformation, there is a wealth of new building stock now existing in the UK. It is

widely known that school buildings can have considerable implications for teachers, staff and children alike in various ways. However, as Sanoff indicates (p.5 cited in Walden 2015), education reforms have tended to focus on what is taught and how the content is taught, rather than the physical environment in which teaching occurs. The experiences of users in school buildings are particularly important, to ensure suitable conditions for teachers at work, to encourage and enhance the process of teaching and learning and to ensure children feel comfortable and want to attend school. Children spend a large proportion of their lives in their school buildings and they are undoubtedly receptive to their surrounding environment as interactions are direct and easily observable (David and Weinstein, 1987). As such, questions about schools are raised: how does the physical school environment make children feel and does this impact on their daily experiences whilst at school?

The design of a school is a complex undertaking and considering the developments over the last twenty years in education reforms, school modernisation programmes, information technology and the potential for more radical changes in the future, this has led to the value of the traditional classroom being questioned (Brennan, 2010). Therefore, continued research into new school buildings is imperative. Research into schools has tended to focus on specific elements of the physical environment that can impact on the users of these buildings. However, as it has been noted, there are multiple factors which can impact on the users (Higgins et al., 2005b). Considering the changes that have been implemented, and the move towards standardised solutions, new school buildings require evaluation now that they are in occupation. It is essential that a better understanding of these new school buildings is obtained and the potential impact of these environments on the users is explored, in order to understand what has worked well and to identify any issues that may still need to be addressed in school design in the future. The next generation of school design needs to be informed by rigorous research (Plotka, 2016). Evaluation of school environments lacks a systematic, *qualitative* process with the involvement of the users, and in particular, there is a lack of involvement of the pupils. Integrative, participatory approaches can provide a more holistic understanding of a building's performance (Wheeler and Malekzadeh, 2015) and the users' experiences. However, research which gathers children's perspectives is limited. Although, research by Ghaziani (2010) and Darmody and Smyth (2012) begins to address this in relation to school design, further studies are required. By conducting research on 'new' school buildings,

obtaining the users' perspective, it has the potential to provide architects with a significant resource for the design of school environments, which can foster the noble outcomes mentioned at the beginning of this section, for children in the future.

1.3 Research question and aims

Considering the importance of the physical school environment and the potential impact this can have on the users, this thesis is framed around the rationale that there is a lack of research on the UK's new primary schools, and more specifically a lack of research obtaining children's own views. The current situation will be reviewed by investigating users' experiences in recently built primary school buildings. By advancing and enriching the existing research in the area of school environments, this thesis will provide fresh information that can potentially aid future school design projects. As such, an over-arching broad research question was posed as follows:

How do new[1] primary school environments impact on children, from their perspective?

Posing this research question, it is necessary to define the term 'school environments'. Within this thesis, the extent of the *physical* school environment will be concerned with the school building(s) itself, extending to the wider school grounds and the context within which the school is located. However, the broad terminology in the research question has been intentionally adopted to allow for the multiple inter-related factors that constitute the term '*environment*' to emerge; for example, this may include more than merely spatial or physical attributes. The term 'environment' is discussed in more detail in Chapter 2, as part of the literature review.

During the course of the research, a pilot study was conducted to begin to unpick the research question, develop the research methodology and trial potential methods to be adopted. Reflecting and reviewing the initial data collected from the pilot study

[1] *New school buildings are defined as those that have been built as total new build or newly extended within the last 15 years. This time period was chosen to span all school building programmes since the BSF was initiated and would allow for any case study schools to be from a variety of funding mechanisms.

framed three further sub-questions. Chapter 4 describes the nature of the pilot study and the development of the following sub-questions:

1. **What factors in a new* primary school environment are considered important to children?**
2. **How do environmental and physical characteristics affect children at school?**
3. **How can the school environment affect children's place experiences?**

Ultimately, there are two main aims of this thesis:

1. **To understand how characteristics of the school environment can impact on children's experiences at school and identify aspects of primary school environments which are important to children, to inform future school design**

   This will be achieved by initially conducting a review of the literature surrounding school design and children's environments whilst conducting scoping studies, to build an understanding of the current context.

   Qualitative data will be collected from case study primary schools, evaluating the findings to identify useful information for future primary school design.

2. **To investigate the usefulness of participatory methods in the evaluation of primary school buildings**

   This will be achieved by conducting a phased research study which explores the use of different participatory methods and their usefulness will be evaluated throughout, which may inform future evaluation methodologies.

1.4 Scope of the study

The initial research question set out, lends itself to conduct an investigation with a participatory approach, by engaging directly with the users of school buildings to gain an insight into their experiences. As such, the research has been carried out in stages

to achieve the main aims, whereby each of the research phases has informed the subsequent actions. Initially, a literature review was undertaken in conjunction with conducting a scoping study, where initial visits to schools were made to build an understanding of the research context. An outline of the key issues explored in the literature review which have framed the research is outlined in Figure 1-1:

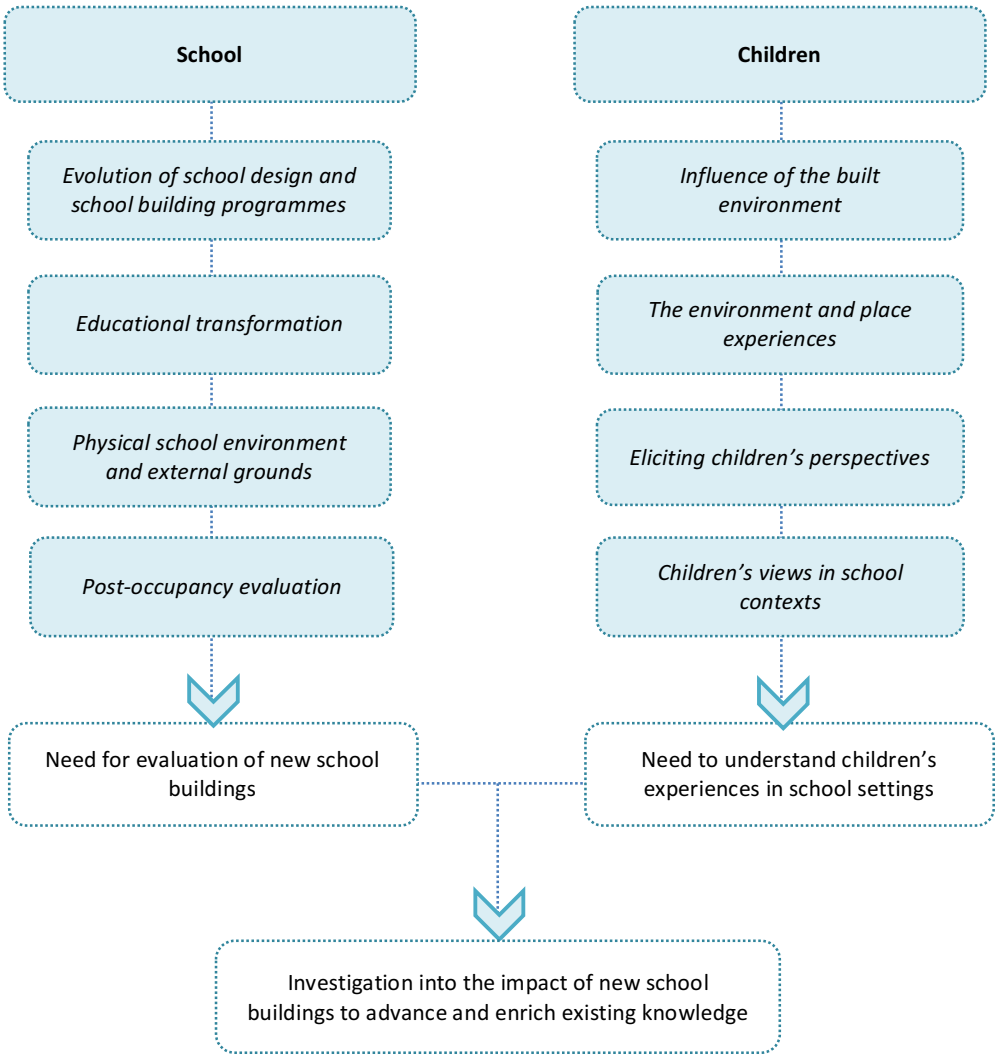

Figure 1-1 Overview of literature review subject matter which frames the research

By adopting participatory and creative methods, it would provide an understanding of primary school buildings through the children's eyes, giving them a voice within the research. The pilot study was initially undertaken to trial participatory methods, with both adults and children alike, which informed the final approaches adopted for the study. For the main data collection, four primary schools were identified as case studies to participate in the research. Methods were implemented across three key

phases. For Phase 1, initial observation of the context was conducted, where the researcher spent time in each of the case study schools, becoming familiarised with the settings. Phase 2 consisted of participatory studies with the children, including: child-led tours, during which children took photographs of their school environments; focus groups with drawings; and scrapbooks. For Phase 3, the scrapbooks completed by the children were reviewed by conducting interviews and focus groups and a preference survey was undertaken using the photos taken by children on the child-led tours from Phase 2.

Finally, extensive analysis of the qualitative data collected from the participatory methods has been completed. The usefulness of the methods has been assessed by refining the methods following the pilot study and evaluating the limitations of the different approaches that were eventually adopted. As such, methods used to engage users in evaluating their school buildings may be adopted in future studies. A further potential outcome of this research is to set a precedent for architects and designers, by not only providing an insight into the four post-occupancy studies on new primary schools, but also by highlighting the importance and benefits of adopting participatory techniques in future school design and evaluation of buildings. Figure 1-2 indicates the key phases of the research.

1.5 Structure of the thesis

This thesis comprises ten chapters. Chapter One has provided the background and research context; outlined the research question and key aims; as well as the rationale behind the research and the scope of the study. This section will summarise the structure of the chapters that follow.

Chapter Two provides a review of the literature relating to schools which sets the context and background for the research. The chapter outlines the literature surrounding the topic of school environments including a review of how school design has evolved in the UK with reference to educational transformation and assessing the current state of research in the area. The chapter also discusses methods of evaluating school buildings and aims to highlight why schools remain an important area to research. *Chapter Three* provides a review of the literature relating to children,

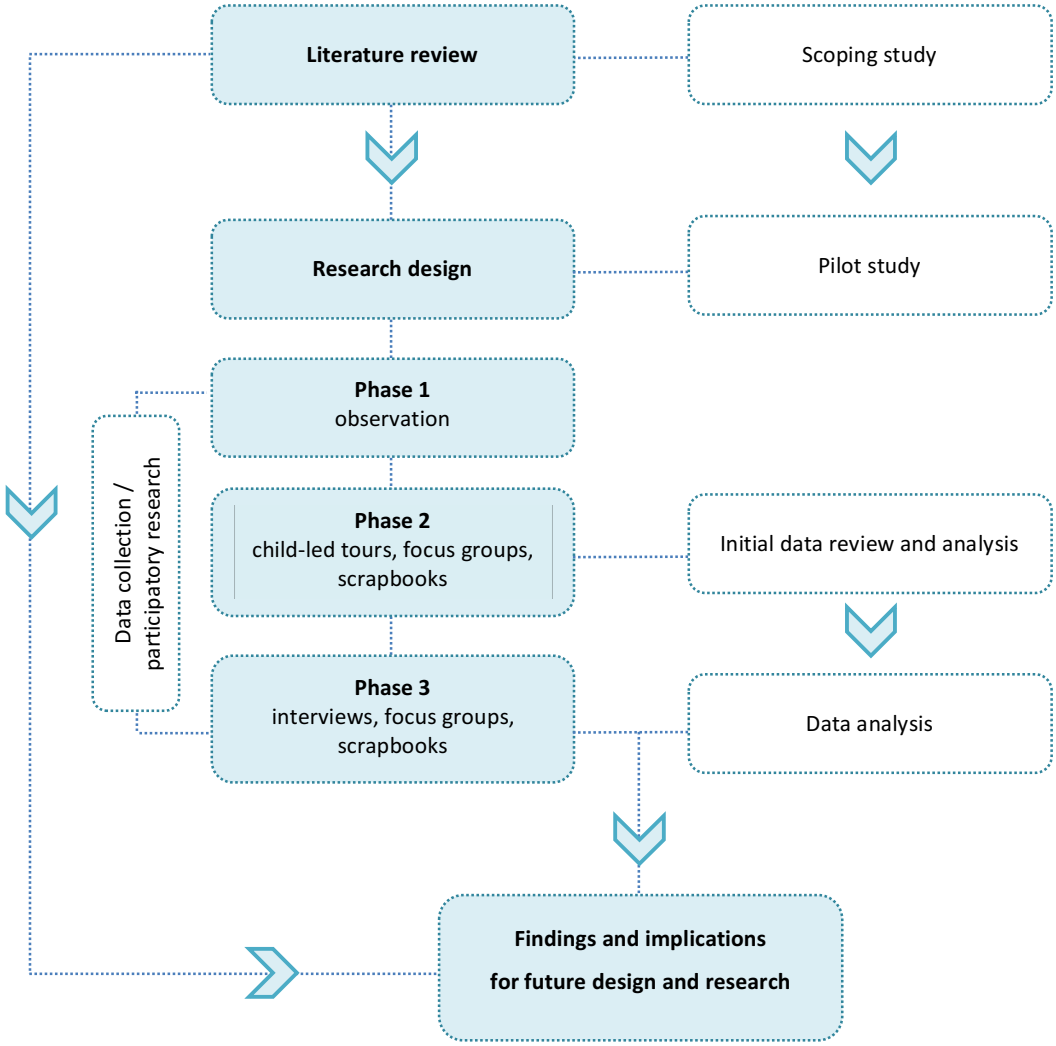

Figure 1-2 Scope of the study and data collection phases

providing an overview of the literature relating to children and the influence of the built environment; the environment and children's place experiences; the importance of eliciting children's perspectives in research and in particular, in the school context. The chapter concludes by summarising the necessity for the research: that children's experiences should be explored to gain an understanding of how school environments can impact on their lives at school.

Chapter Four presents the evolution of the research study and introduces the development of the research methodology. The rationale for the research and theoretical approach is discussed. This chapter presents the details of the pilot study and explains the role it played in the development of the research methods and the refinement of the research questions. *Chapter Five* describes the research design and implementation, including; an outline of the development of the research methods

following the pilot study, the implementation of the fieldwork and the procedures for data analysis.

Chapter Six presents the preliminary findings and describes each of the case study schools, providing context for the reader. This chapter presents a summary of the raw data and the results from the photo rating survey; concluding with a summary of the emergent categories from these findings. This chapter is intended to be used to set the scene and for reference in the discussion of findings in the subsequent chapters.

Chapters Seven, Eight and Nine draw together the key themes from the data and present a series of discussions based on the main findings from the data. The thematic findings and relationships between themes are discussed in relation to the existing literature, providing conclusions that are distilled in Chapter Ten. *Chapter Seven* presents the thematic findings relating to children's perceptions of the school as an holistic environment and discusses the characteristics that can affect children's feelings at school. *Chapter Eight* presents a further discussion related to the desirable characteristics for children at school, with a focus on learning spaces and children's needs, wants and desires. *Chapter Nine* presents the discussion regarding the thematic findings associated with the external school environment, highlighting the importance of external spaces and the natural environment for children in learning and play.

Chapter Ten concludes the thesis by summarising the key findings and conclusions, aligning these with the research questions and suggesting the contribution to knowledge. The chapter reflects on the research process, outlines important considerations and limitations of the research and suggests the implications and potential for future research. Further documentation is referenced throughout the thesis and is provided in the Appendices.

Throughout the thesis, children have been given pseudonyms for illustrative purposes. Additionally, all extracts from the children's comments are presented exactly as they have been recorded during the participatory studies, including all mis-phrased words, poorly constructed sentences and the use of slang words, in order to maintain the authentic voice of the children.

Chapter 2

School

2 School

2.1 Introduction

> "*Researchers have failed to fully explore the relationship between the school environment and its users, that is students, teachers and community. It has been noted by some bodies that this makes it difficult to assess the impact of new schools*"
>
> *(Audit Scotland, 2008, cited in Edgerton et al., 2011 p.33-34)*

To set the context for the research, this initial chapter of the literature review is focused on school environments and emphasises why schools remain an important topic for research. The chapter reviews the current extent of research, initially by providing a summary of how school design has evolved in the UK and the aims for educational transformation. Studies that have addressed the impact of the physical environment of schools are discussed, identifying key issues that have been raised as factors which can impact the users of school buildings. Finally, existing methods available for evaluating school buildings are reviewed. The chapter concludes with a summary of the findings from reviewing the literature and identifies the gaps in the literature that have emerged.

2.1.1 Scoping study

Whilst reviewing the literature, to familiarise with the existing context of school environments and to further define the research questions, visits to various schools were arranged and conducted. The overarching research question will investigate how new school environments might be impacting on the users, with a specific focus on children's experiences at school. In the first instance, the researcher concentrated on visiting primary and nursery schools (in the United Kingdom) because it is known the built environment can affect children more significantly from an early age (Weinstein and David, 1987, Dudek, 2005). As such, the focus of these initial visits was to study environments for children aged four to eleven at UK primary schools. In addition to this, the opportunity arose to make some visits to secondary schools, where they were

attached to a primary school. A range of schools were visited including new and old buildings, rural and urban, state and private schools, and two academy schools. Appendix A provides a summary of the school visits.

By conducting the scoping visits, the multi-faceted nature of undertaking a study which investigates the impact of school environments became clearer; this has also been noted by Higgins et al. (2005b p.35) and can be seen from the literature that follows in this chapter. Additionally, it was evident to the researcher, that some of the school buildings visited had notably different physical environments and this led to broadening the literature review to assess wider studies on school environments. The scoping visits, in conjunction with the literature reviewed, determined that the research would focus on *new* schools, to advance the understanding of how they might impact on children.

2.2 Evolution of school design in the UK

For the past 15 to 20 years, there have been major changes in the design and procurement of school buildings, with significant Government investment at the start of the new millennium, due to school buildings becoming difficult to maintain and becoming unsuitable for purpose, due to their poor condition (Mirchandani and Wright, 2015). This investment had followed a period of stagnation in the construction of new school buildings as the focus in the 1980s and 1990s was on exams and curriculum (ibid). The National Curriculum in the UK (and elsewhere) has been evolving, leading to developments in pedagogy with the introduction of information communication technologies and digital devices in schools, and the integration personalised and active learning (Rudd, 2008, Harrison, 2008). Nevertheless, challenges still remain today, with continued advancements in pedagogy and many existing school buildings being in poor condition, lacking in effective maintenance. Additionally, the Government are faced with the worst shortage of school places for several years and the number of children in classes being the highest for over 15 years in 2015[1], with over 30 young children being taught in some classrooms (Plotka, 2016 p.11).

[1] This figure for 2016 saw a slight decrease, however the number of children in classes over 30 children remains higher than in 2013 and 2014 DFE 2016. *Schools, pupils and their characteristics: Januray 2016*, Department for Education.

2.2.1 Précis of school building programmes

Significant developments began with the introduction of the private finance initiative (PFI), in 1992, used to fund new buildings (Mahony and Hextall, 2013) and this was followed by significant investment in the Building Schools for the Future (BSF) programme during the 2000s which prompted educationalists, teachers and architects to reconsider the idea of what a school may be (Clegg, 2016). The BSF programme, initiated by a desire to achieve high quality learning environments that enhance learning, were intended to be functional but inspiring (DfES, 2003c) with design 'quality' being an important factor to address core issues of sustainability, flexibility and adaptability, and value for money (DfES, 2002b). Capital investment was initiated a few years after The Egan Report; *Rethinking Construction* (1998) and was the largest single capital investment in school building in 50 years (4ps and Partnerships for Schools, 2008) since that of the Victorian era and post-war building booms. The multi-billion pound budget allocated, sought to rebuild or renew all secondary (and some primary) schools in England by 2020 (CABE, 2007) and as such, the intentions were for these new school buildings to: "inspire learning. They should nurture every pupil and member of staff. They should be a source of pride and a practical resource for the community" (DfES, 2003b p.1).

The BSF school building programme sought to address issues of buildability and efficiency (DfES, 2002b), whilst it was also recommended that the construction industry should "better meet the needs and expectations of the building's users" (DfES, 2002b p.15). Challenges of the BSF programme were to address both pedagogical transformation and issues with poor and dilapidated school buildings; for example, schools built in the 1960s and 1970s which were over-glazed, poorly insulated and had high running costs (DfES, 2003c). The programme intended to rebuild and renew schools in the UK over a period of 10 to 15 years to allow for 'educational transformation' that would inspire new ways of learning (Leiringer and Cardellino, 2011 p.917). The key aims of the BSF programme included: "providing modern facilities for staff and pupils…improved standards and motivation; local community involvement in design and use of schools, transformation of education and communities and developments in new models of funding" (Mahony and Hextall, 2017 pp.92-93). However, Mahony and Hextall (2017 p.93) have suggested that these intentions "lacked clear focus" and that the process was over-complicated, resulting

in wastefulness of resources. Additionally, the BSF programme was also intended to provide community facilities in line with the 'Every Child Matters' agenda; to build services around the needs of children and reconfiguring these as part of an extended school (DfES, 2004c).

It was not only secondary schools that were being transformed, the BSF programme also considered some primary schools and there was significant investment into refurbishing or rebuilding some of the existing building stock. Furthermore, the Primary Capital Programme (PCP) was introduced, investing £1.9 billion (DCSF, 2008) from 2008, and was due to run for 15 years, aiming to modernise up to half of all primary schools in England, focusing on those that are in the poorest conditions (DCSF, 2008, Ghaziani, 2008, RM, 2007). Aims for the PCP were similar in nature to BSF, if not as wide ranging in scope, with the intention to fully equip primary schools for 21st Century learning (DCSF, 2008), where such schools also become the heart of the local community with extended services, in line with the 'Every Child Matters' campaign (DCSF, 2008, RM, 2007). This focus on community had evolved in the years that followed the implementation of BSF, where there was a shift in emphasis for local authorities to consider the 'whole school estate', planning for the long-term in order to renew this infrastructure whilst also transforming education in primary schools (DCSF, 2008).

After several years procuring new school buildings under BSF and the PCP, the school building regime in the UK was turned on its head once again. The appointment of a new coalition government, in 2010, led to an extensive review of public expenditure; the ultimate aim being to rebalance the economy by reducing the deficit (Mahony et al., 2011). Ultimately, the coalition government axed the BSF programme, cancelling over 700 BSF projects (Mahony and Hextall, 2017). In the wake of this decision, a major review of education was commissioned by the government in 2011: The *Review of Capital Education*, to investigate expenditure on education. The key findings of this review reported: school building processes had been too complex and time consuming; the design process was not considering high quality or low cost, with designs being too bespoke; lack of expertise from the client side to lower cost of building methods; devolved funding processes not delivering objectives; lack of consideration for the lifetime cost of schools and the complexities of regulations and planning limited the process (James, 2011 p.5). Furthermore, it has also been

suggested that the implementation process was “too expensive, bureaucratic, complicated and wasteful” (Mahony and Hextall, 2017 p.93).

Following the Review of Capital Education, the UK government then released plans for the Priority School Building Programme (PSBP), where 261 schools were to receive funding to improve or rebuild their school (of the 587 schools that applied for funding), aimed at the most dilapidated buildings with building work due to be completed by the end of 2017 (Building, 2014). The schools were to have a budget of approximately two thirds of the cost per square metre of the BSF programme, adopting standardisation approaches and baseline design guidelines and the aim being to make school building more efficient and cost-effective (National Audit Office, 2017 p.11).

2.2.2 School building in times of austerity

Malinin and Parnell (2012) suggest that during the economic downturn (2008-2012), it became apparent that certain elements of school design are considered ‘luxury’ by policy makers and can ultimately be omitted from projects; warning that designers should be aware of becoming overly influenced by pre-conceptions of what a school should be like. Considering the major investment in the construction of new school buildings over the past decade, questions are raised, concerned with impact of the latest wave of school designs on the occupants’ experiences in these settings, and the practical usability of the buildings. Some have also suggested that current school buildings and design could have returned to where they were 10 years ago, with decreasing space standards, reduced budgets, relaxed acoustic requirements and seemingly reduced sustainability targets (Clegg, 2016). Given the austere financial climate in which these changes occurred, reducing the costs of school buildings had become a priority, as Mahony and Hextall (2017) point out, there is uncertainty for the resultant school estate which will comprise BSF new build schools, cheaper standardised new builds and schools which remain in poor condition and continue to deteriorate. Therefore, it is important to continue to conduct research on school environments, to understand the successes and failures across this array of buildings, which now form the school estate in England and Wales.

2.2.3 Design guidelines and initiatives

During the Building Schools for the Future programme, a desire was to establish the 'Classroom of the Future' (DfES, 2002a) and 'educational transformation' (Cardellino et al., 2009). During the launch of the programme, design teams were employed by the Department for Education and Skills (DfES) to create 'Exemplar Designs', five of which were to be secondary schools and five to be primary schools. Key criteria for the new school designs included: to provide an inspirational environment, to ensure staff satisfaction, to raise pupil satisfaction, to engage with the community and to provide design quality. These were developed together with a suite of Building Bulletins design guidance (For example; BB95, BB93, BB98, BB99; DfES, 2002b, DfES, 2003a, DfES, 2004a, DfES, 2004b). The documents are guidelines which provided design guidance for schools in terms of area requirements, acoustics, ventilation provisions etc. Essential design requirements for primary school projects included: "flexibility and adaptability", "access and inclusion", "safety and security" and "environmental performance" (DfES, 2004b p.21-23) whilst specific areas were provided for the key spaces within the school. Furthermore, environmental standards were set[1], CABE were involved in design reviews and further design guidance and specifications were released for all aspects of school design including; outdoor spaces, sports facilities and community uses (Mirchandani and Wright, 2015 p.11). However, given the multitude of documentary guidance and standards, it remains that 'educational transformation' has never been fully articulated within the literature (ibid.) nor has it been confirmed whether or not it may have been achieved.

The design quality of schools was thought to be a key factor in providing good places to learn for children (Cardellino et al., 2009 p.249). Moreover, the Commission for Architecture and the Built Environment (CABE) stressed the importance of good design (CABE, 2010). CABE drew reference from Mark Schneider's study *Do school facilities affect academic outcomes*?, where conclusions suggested school facilities do affect learning, with regard to spatial configurations, noise, heat, cold, light and air quality and an ability for teachers and children alike to perform (Schneider, 2002):

[1] All major new build projects were to be assessed using the Building Research Establishment Environmental Assessment Method (BREEAM) (DfES, 2004b)

> "Design alone cannot raise achievement, but poor design can be an obstacle to raising educational standards above a certain level" (CABE, 2010 p.8)

The significance of the physical learning environment was emphasised and research recognised the potential impact of the environment on children's learning and experiences at school (Flutter and Rudduck, 2005, Cardellino et al., 2009, Darmody and Smyth, 2012). Section 2.4 provides a review of this literature. There was a need to achieve high quality environments that enhance learning, which are functional but inspiring (DfES, 2003c). Design 'quality' is difficult to quantify, nevertheless, it was considered a factor in addressing issues of sustainability, flexibility and adaptability, and value for money (DfES, 2002b). However, Mahony et al. (2011 p.347) raise the point that the apparent "fuzziness" over the ambitious aims of the BSF programme, would ultimately make it difficult to measure whether it achieved any of the goals or quality in the designs. Likewise, Mirchandani and Wright (2015) have highlighted that evaluation of the programme and the schools themselves has been sporadic, and lacking a systematic approach. Thus, there is a need to research the outcomes of these approaches and initiatives, to provide future guidance for designers.

2.3 Educational transformation

The UK government agenda, 'Every Child Matters', is a national framework that wishes to build services around children and young people's needs (DfES, 2004c p.2). It set out to "ensure that every child has the chance to fulfil their potential by reducing levels of education failure, ill health, substance mis-use, teenage pregnancy, abuse and neglect, crime and anti-social behaviour among children and young people" (HM Treasury, 2003 p.5). Educational transformation has its roots in this agenda. This approach to children's well-being set out five key outcomes: be healthy; stay safe; enjoy and achieve; make a positive contribution and to achieve economic well-being (CABE, 2007). As such, the rebuilding and refurbishing of school projects were aimed at supporting this commitment to children and young people. Significant investment into both secondary and primary schools in the UK shared the common aim of creating schools equipped for 21st Century teaching and learning, supporting the transformation of education (DCSF, 2008) and this remains a key aim in improving schools today. As this phrase is used many times across the literature and policy

documents, it provokes the question: what does *educational transformation* mean? And how was this expected to be achieved through the design of new schools? The Department for Children Schools and Families (DCSF) outlined the goals and aims, summarised in Table 2-1:

DCSF Goals for Educational Transformation
Deliver high standards in world-class schools
Narrow achievement gaps and tackle the effect of poverty and disadvantage
Enhance school diversity and parental choice
Increase access to community services delivered by and through primary schools
Deliver creative, flexible designs supporting the best thinking on teaching and learning
Secure effective use of new technologies
Produce places for learning that are exciting, flexible, healthy, safe, secure and environmentally sustainable

Table 2-1 Goals for educational transformation (DCSF, 2007, 4ps and Partnerships for Schools, 2008, CABE, 2010)

These broad goals highlighted the implications for schools, including; both practical changes to the school buildings and changing pedagogies, allowing for children to have more control over their learning, which is thought to be desired by children (Burke and Grosvenor, 2015 p.69). Additionally, Leiringer and Cardellino (2011) implied that it was about creating inspirational environments:

> "…the target for the programme is the achievement of learning environments in which ambitious education outcomes can be delivered that inspire teachers to innovate and young people to engage" (Leiringer and Cardellino, 2011 p. 917)

In addition to the main DCSF goals, it was suggested that new schools should aim to achieve the objectives outlined in Table 2-2:

Objectives for future schools for transforming education
Learn in a range of different ways, in a variety of environments and at times respond to their individual needs
Experience learning that will prepare them for future life and work
Develop confidence and feel safe and secure in and around their places of learning
Use high quality computer technology to inspire and support their learning
Extend their learning and leisure beyond the school
Make good progress resulting in high levels of achievement

Table 2-2 Objectives for future schools (4ps and Partnerships for Schools, 2008 p.14)

These goals and objectives indicated implications for the design of schools. Furthermore, CABE outlined the implications for design in *Creating Excellent Primary Schools* (CABE, 2010), including:

- Personalised learning
- Extended school agenda
- Encouraging parental involvement
- Inclusion
- ICT in primary schools
- Sustainable schools
- Outside spaces in education
- Healthy eating

Considering the goals outlined for primary schools, it is evident that some of these could be affected by the design of the physical school environment, including new or refurbishment projects (CABE, 2010). However, it was a concern that this intended transformation of learning may be over-shadowed by practicalities of the building process, with a focus on time constraints and project costs, where it was feared that "existing models of teaching and learning [would] remain largely unchallenged" (Mitchell, 2008 p. 244). Likewise, Leiringer and Cardellino (2011 p.927) also highlighted the importance of finding a balance between good school design, commercial reality, and pedagogical approaches.

It was suggested that the process should involve people (CABE, 2004); local authorities, school governors, head teachers, pupils, parents and the local community should be involved in school building projects in generating the brief and during the design process. Mitchell (2008) argued that to transform learning, it would need everyone to be at the heart of the process, in order to facilitate a significant culture change in schools. Furthermore, Leiringer and Cardellino (2011 p.931) suggest that "the underlying learning intentions and values of the schools can be successfully incorporated into, and supported by, design". However, it has been noted that perhaps transforming modes of teaching, in highly achieving schools, may not be necessary and therefore, there is little incentive to look into more contemporary innovative designs (ibid). Furthermore, it has been suggested that consultation was not straightforward and there were tensions arising between commercial confidentiality and feelings of disempowerment in local communities which weakened any participation processes (Sheard and Avis, 2011, Mahony et al., 2011).

Considering the fundamental changes in education, technology and investment into school building programmes, it remains to be seen whether we are truly providing educational transformation and classrooms of the future; the impact of new school buildings requires research and evaluation. The BSF programme in particular has been subject to reviews in terms of its ability to achieve educational transformation, however, concerns are raised that the new schools built to higher specifications are not necessarily effective in improving education (Leiringer and Cardellino, 2011, PricewaterhouseCooper, 2008). Burke and Grosvenor (2015 p.66) point out that the methods of teaching in a classroom, its spatial arrangement and the lived experience in school has remained the same for many years, suggesting that "learning has become a commodity", a 'thing' which is thought of as 'work'. However, they remind us that "in fact, learning, like play, is a natural activity in childhood" (ibid p.66), highlighting the importance of children's perspectives and noting the multiple environments in which learning takes place. Ultimately, the term educational transformation and whether this has been achieved, remains ambiguous and unclear (Cardellino et al., 2009, Leiringer and Cardellino, 2011). There is now a wealth of 'new' schools which have been built under BSF, the PCP and the PSBP which raises the question: have new schools transformed the learning experience for children? The major changes and advancement in school design over the last 20 years substantiates the necessity for more research into new school buildings.

2.4 The physical school environment

This section highlights the potential impacts that elements of the physical school environment can have on users, including: literature relating to multiple physical characteristics, visual aesthetics, spatial characteristics and environmental characteristics, including lighting, thermal comfort and acoustics.

Considering the significant changes in school design and the introduction of school building programmes in the UK over the last two decades, it follows that there is a considerable research base from which to draw on. However, it is argued that there has been limited attention on *where* children learn and that research into the impact of the physical environment is lacking (Edgerton et al., 2011 p.34). Research has been concerned with aspects affecting school design and the potential of the physical conditions in a school environment influence on *how* children learn (Earthman, 2004) and has focused on cognitive and social aspects of learning in conjunction with the interplay of various environmental factors (Malcolm et al., 2011). Additionally, a report by British Council for School Environments (BCSE) indicated that one-third of teachers suggest that poor school design had a negative impact on their teaching (Edgerton et al., 2011 p.33). Leiringer and Cardellino (2011) explored the link between the design of school buildings and how learning environments can support an approach to teaching and education, the most significant finding proposed by their study being that the school ethos and pedagogical intentions can be supported by design. Furthermore, Dudek (2007 p.99) argues that the physical environment can enhance the *experience* of learning, highlighting potential social implications for design.

Systematic reviews of the literature on school environments have been conducted and have found strong evidence that some characteristics (for example, features defined by Earthman and Lemasters (1998 p.5) as: colour, age, classroom layout, climatic conditions, social density, noise, lighting and maintenance) can affect student performance and achievment (Earthman, 2002, Heath and Mendell, 2002, Schneider, 2002). In 2005, The Design Council commissioned a systematic literature review and explored the impact of school environments on pupils, considering their achievement, engagement, attendance and general well-being (Higgins et al., 2005b). The review highlights the fact that schools are complex systems and the physical environment is just one of a number of factors that can impact on the users, others being pedagogical,

socio-cultural, curricular, motivational and socio-economic (Higgins et al., 2005b p.35). As such, it becomes difficult to identify causation and effect in many of these studies, due to multiple variables at play. It is argued that physical elements and design features can affect students' and teachers' behaviour, however, the review concludes that it is difficult to achieve definitive conclusions because of the multi-disciplinary topic and the wide-ranging literature which has been shown to be contradictory in nature (ibid.); much of it being inconclusive (Schneider, 2002 p.1). However, Sanoff (2001b p.2) suggests that there are common misconceptions strengthening the argument that the quality of the school building has little impact on performance and notes a gap between the design process and educators' views on improving quality.

Research which investigates the physical environment has tended to minimise the complexity of facilities by focusing on single factors (Lackney, 1999). However, it is known that many inter-related variables can potentially have an impact, including: class size, spatial density, location, acoustics, ambient temperatures, air quality as well as social factors (ibid). Nonetheless, there are studies which have attempted to explore the specific design features that might impact on learning in multi-element analysis.

Tanner (2000) conducted an empirical study that investigated the potential influence of architectural elements of a school on student achievement. The study undertaken measured the environment through an assessment of 'design patterns' against standardised test scores. Design patterns were developed from a review of literature and borrowed from Alexander et al. (1977); for example, promenades, green areas, quiet areas, play areas, and outdoor spaces amongst others. Tanner (2000) suggests a correlation was found between design patterns and average test scores of pupils, concluding that at schools which were in 'harmony with nature', with positive outdoor spaces, students earned higher test scores. Additionally, Tanner (2009) argued that that other factors such as movement and circulation patterns, natural light and views can have a positive impact on achievement. Nevertheless, these studies are limited not only by their sample size but also the nature of scoring the 'design patterns'. Schools achieved a design score, however, this was somewhat subjective in nature, as it was based on the "perceived dominant descriptor" in terms of functionality, adequacy, safety and quality (Tanner, 2000 p.321).

In a post-occupancy study, Barrett and Zhang (2009) were interested in the principles of sensory connections between learning and physical space, based on research evidence relating to human sense perception. Key design elements were found to support this, which should be considered for school design, consisting of: 'naturalness' (light, sound, temperature and air quality); 'individualisation' (choice, flexibility and connection); 'stimulation' (complexity, colour and texture). Findings relating to these themes were intended to complement the Building Bulletin design guidance. However, whilst the report proposes useful guidance, the evidence is provided based on a limited number of case studies of "well-regarded primary schools" (Barrett and Zhang, 2009 p.2). There are limited details of the post-occupancy toolkit that was implemented and how the data was collected. Nevertheless, subsequent empirical studies have indicated evidence that physical design parameters can have an impact on pupil's learning and progression at primary school (Barrett et al., 2012, Barrett et al., 2015a); including the major project: 'Holistic Evidence and Design' (HEAD) by Barrett et al. (2015b). Whilst this study by Barrett et al. (2015b) provides significant evidence from detailed surveys of 153 classrooms in 27 schools and performance statistics of the students, the study adopts a novel approach based on the themes listed in the aforementioned study ('naturalness', 'individualisation' and 'stimulation'). The conceptual framework and the themes have been developed by the researchers, rather than in consultation with the users of schools. Furthermore, as physical design parameters, the themes are particularly broad in nature. Nevertheless, the project claims, that for the first time, clear evidence has been found that links the design of primary schools to the enhancement of children's academic performance in reading, writing and maths (Barrett et al., 2015b p.3), with specific reference to the classroom.

Studies have emphasised the complex nature of designing a school environment and the holistic approach required to integrate many, sometimes conflicting factors. There is a wealth of research that addresses individual physical aspects and environmental characteristics, therefore, sections that follow provide a summary of the key findings from the literature.

2.4.1 Visual aesthetics

Historically, it is known that Montessori classrooms valued the visual quality of learning materials and cleanliness, believing that the environment will gain respect

from children (Dyck, 2002 p.53). On considering the matter of visual aesthetics, the effects of colour have been researched and depend much on the age of the children (Woolner et al., 2007 p.57) and it has been suggested that younger children prefer bright colours whereas adolescents prefer subdued colours (Engelbrecht, 2003 p.3). However, as Woolner et al. (2007 p.57) note, it has been argued that warm colours are favoured over the use of primary colours for young children (Pile, 1997). Colour is thought to affect mood, mental activity and energy levels (Higgins et al., 2005b p.20) and it has been argued that colour can also have an effect on blood pressure and behaviour (Taylor and Gousie, 1988 cited in Dyck, 2002 p.56) whilst it has also been shown to contribute to feeling relaxed and comfortable in an environment (Hathaway, 1987 cited in Dyck, 2002 p.56). Nevertheless, as Higgins et al. (2005b p.7) point out, the research provides conflicting evidence on the effects for different people and perhaps children. Differences are suggested between male and females (Rosenstein, 1985, Radeloff, 1990, Read et al., 1999) whereas this is contradicted in a study by Ou et al. (2004 p.239), suggesting there is no difference between genders. Hathaway (1987) believed that colour can improve the environment for learning, whilst Engelbrecht (2003 p.2), proposes that colour in the classroom can affect productivity. Opinion-based literature emphasises children's preference for colour (Ghaziani, 2008 p.232-234, Ghaziani, 2010 p.13, Burke and Grosvenor, 2015 p.xv) in the school environment. Maxwell (2000 p.278) highlights the importance of colour to pupils, whereas parents and teachers might not share the same view. However, it was also found that all users agreed that displaying children's work in school made it feel more welcoming (Woolner et al., 2007 p.59). The importance of children's artwork was also indicated by Killeen et al. (2003 p.259), suggesting that it increases feelings of ownership, involvement, and can be linked to student motivation, also suggesting that it should become part of the building fabric (Woolner et al., 2007 p.59-60). However, others contest these findings; for example, Dudek (2007 p.55,58) argues that the visual impact of wall displays can cause a 'cluttered' effect whilst discussing the modern classroom as a machine for learning, suggesting that calm, neutral environments can encourage calmness in children's behaviour. As such, Higgins et al. (2005b p.7) offer the conclusion that there has to be a balance, in display of students' work, between permanent and new visual elements.

2.4.2 Spatial characteristics

Across the literature there are other factors within the physical school environment that have been studied, but perhaps not as extensively; for example, ceiling heights affecting feelings, behaviour and distraction in classrooms (Ahrentzen and Evans, 1984 pp.446-447, Earthman, 2004 p.31); appropriately sized, ergonomic furniture and equipment and its potential to affect behaviour (Aagaard and Storr-Paulsen, 1995, Troussier, 1999, Knight and Noyes, 1999, Burke and Grosvenor, 2015 pp.139-140) and accessible and well thought out storage (Loughlin and Suina, 1982, Gump, 1987). Nevertheless, the arrangement of furniture in a classroom is a much-debated issue in the literature. However, it seems one of the basic elements that can be easily altered in the classroom space (Higgins et al., 2005b p.25). Comparative research between rows of desks and tables suggests perhaps less successful students are affected by desk arrangement (Wheldall et al., 1981, Wheldall and Lam, 1987, Wheldall et al., 2013). However, as McNamara and Waugh (1993 p.44) point out, it is important to consider group size in the classroom and this tends to determine the furniture layout rather than pedagogical reasons whilst Higgins et al. (2005b p.7) suggest that it is necessary for classrooms to allow for flexibility for different purposes.

Toilets have long been an issue in school buildings. Inadequate access to clean facilities can affect children badly and have a negative impact on children who need additional support and children experiencing bullying (Burton, 2013 p.4). Studies have shown that children were unhappy with their school toilets and feeling like the toilets are dirty (Burke and Grosvenor, 2015 p.13). Nonetheless, many schools have redesigned or refurbished their toilets over the past decade. However, it remains an issue in some schools for children (Heppell, 2013 cited in Burke and Grosvenor, 2015 p.13).

It has also been argued that the physical environment could be considered as a “three-dimensional textbook” (Taylor, 1993 p.106), where “the environment, even of the school, the built environment, the trees, dirt, grass of its surroundings, can be used as convenient teaching tools”. Both indoor and outdoor spaces can be seen as useful learning tools, rather than passive environments (Clark, 2007 p.4). Brkovic (2013) explored the notion of the physical environment’s potential to act as the ‘third teacher’, in sustainable design, which has its roots in the Montessori theory of the “prepared environment” (ibid. p.43). Furthermore, Brkovic (2013 p.44) recognised that both Nair et al. (2005) and Hertzberger (2008) propose that appropriately

designed school buildings have the potential to provide a learning experience themselves. As they are rich in interactive stimuli, school environments can provide the opportunity for discovery, investigation, exploration, experimentation and play (O'Donnell Wicklund et al., 2010 p.14). Elements of the environment are thought to impact in terms of spatial, psychological and behavioural experiences (Nair et al., 2005 p.8) whilst Taylor (2009 p.103) proposes that the environment should support the development of children, in body, mind and spirit. Thus, there is potential for the school environment to impact children in deep and meaningful ways.

2.4.3 Environmental characteristics overview

Reviewing literature on school environments draws on a wide range of multi-disciplinary fields and some of the literature that has attended specifically to the physical environment has explored the effects of environmental variables, such as: lighting, thermal conditions and acoustics. As such, there is both quantitative and qualitative, evidence to show the effects of temperature, light, noise and air quality on learning (Higgins et al., 2005b p.7):

> "The emotional systems have evolved over the millennia in response to the natural environment. Spatial configurations, light, noise, heat and air quality have been consistently proved to have a significant impact on students' academic achievement and ability to perform" (Barrett and Zhang, 2009 p.4).

A review undertaken by Heath and Mendell (2002 p.5), of 21 studies on indoor environments, highlights there is some evidence to suggest that aspects of indoor environmental quality (IEQ); for example, poor ventilation and reduced daylight, may be linked to lower student performance. Furthermore, in the *Cambridge Primary Review*, a review undertaken on primary school environments that aimed to understand how school buildings impact on children and teachers (Alexander and Armstrong, 2010), various factors were considered including: noise, lighting, ventilation in conjunction with a schools location and size (Wall et al., 2008). However, the body of research is generally fragmented and many studies focus on a single specific environmental factor (Weinstein and David, 1987 pp.4-5, Lackney, 1999 p.2) rather than considering the whole environment (Darmody and Smyth, 2012 p.191).

Consequently, there is no complete picture of the specific variables which may affect learning, further emphasising the complexity of the challenges for school design.

2.4.4 Lighting

Research has been undertaken into the benefits of good window design, sufficient day lighting and views to the outside world in various building environments including offices, healthcare settings and schools (Markus, 1967, Ulrich, 1984). There are a number of studies that consider how day lighting can specifically impact on pupils' performance in the classroom. Following a significant study into the effects of aspects of the indoor environment on student learning, Heschong and Mahone (2003 p.109) argue that lighting quality in the classroom can induce both positive and negative effects on pupils. Findings have indicated statistically significant effects of day lighting on the behaviour of pupils (Heschong et al., 1999, Heschong et al., 2002). In a more recent study on lighting levels in classrooms in the UK, it was found that 80% of classrooms that are lit with 100Hz fluorescent artificial lighting (the output which can adversely affect visual performance) can lead to headaches and reduced vision (Winterbottom and Wilkins, 2009 pp.63-75). Whereas, Benya (2001 p.5) investigated day lighting and how it is used in conjunction with artificial lighting; suggesting that electronically controlled lighting should be designed so that it responds to daylight levels. Additional studies have been carried out into lighting that examine the effects of coloured light and temperature, effect on gender, health issues and glare (Higgins et al., 2005b p.20). However, as Higgins (2005b p.20) notes, there are conflicting opinions from researchers in terms of the effects of different lighting and the most appropriate lighting for a classroom environment. Perhaps due to the fact that other environmental factors could potentially be impacting on spaces being studied.

2.4.5 Thermal comfort

There is a vast amount of research that has been undertaken considering thermal comfort in classroom environments across various countries (Wong and Khoo, 2003, Hwang et al., 2006, Yao et al., 2009, Liang et al., 2012, Teli et al., 2012, Teli et al., 2013) with some studies also considering air quality (Rosén and Richardson, 1999, Salo et al., 2009). In a review of such literature, Earthman (2004 p.10-11) concluded that thermal comfort, air quality and ventilation were reported the most significant environmental

attributes within schools to impact on pupils' achievement. There are a number of studies that review several elements of school environments and thermal comfort is rated consistently as a factor that can affect behaviour and achievement (Fisher, 2001, Schneider, 2002, Earthman, 2002, Earthman, 2004). In a review of the literature on individual environmental elements affecting student outcomes, Schneider (2002 p.5) reports how thermal comfort is a major factor affecting teachers' ability to carry out their job properly, making reference to findings from Heschong et al. (2002), where environmental control was highlighted as a significant issue by teachers. In addition to the teacher's perspective on thermal comfort, there is considerable difference between adults and children's perception of their thermal environment (Teli et al., 2013 p.314) and further research is required to fully understand the differences in comfort levels.

2.4.6 Acoustics

In many reviews carried out on the effects of the physical environment, acoustics is identified as a major factor that can affect teaching and learning (Fisher, 2001, Schneider, 2002, Shield and Dockrell, 2003, Earthman, 2004, Higgins et al., 2005b). Schneider (2002 p.6-7) points out three key findings from a study by Earthman and Lemasters (1998), which found a strong correlation between excessive and external noise and reduced student achievement, increased stress and perception of the classroom space. The wealth of research in this area is significant, including studies that consider air traffic and external noise effects on children's reading ability (Evans and Maxwell, 1997, Maxwell and Evans, 2000, Haines et al., 2001) and increased background noise levels relating to stress (Boman and Enmarker, 2004). Another aspect to consider is the detrimental effects of classroom noise on children with special educational needs. The consequences this might have for education in an inclusive environment are particularly challenging (Dockrell and Shield, 2006 p.522). The reviews that study the breadth of literature discuss how the acoustic environment is linked to academic achievement including addressing spelling, behaviour, and concentration (Schneider, 2002 p.7). However, overall there is conflicting evidence relating to noise in schools, as Woolner and Hall (2010 p.3255) point out, the challenging nature of designing a suitable acoustic environment: there is an upper threshold at which noise no longer impacts on learning. Social, culture and pedagogy play a part in whether noise has an impact and they argue that that noise cannot be

examined in isolation (Woolner and Hall, 2010 p.3264). It is suggested that there are limitations with this type of research as it fails to address the complexity of the school environment by only assessing individual variables, failing to address experiences related to the whole school environment (Edgerton et al., 2011 p.34).

2.5 External school grounds

There is a general concern that children are becoming disengaged from playing in the natural environment due to perceived risks and safety reasons. It has been suggested that children who have less access to the natural environment may lose their connection to the natural world around them (Woolley et al., 2009 p.iii). The *Learning Through Landscapes* project was set up in 1986, to investigate school grounds, to improve the quality of the environment to provide a stimulating setting for learning (Adams, 1990) and findings showed that there was a need to improve environmental quality of school grounds in order to extend education opportunities at school. However, it remains apparent that even though children spend a large proportion of their time in their school grounds (Ghaziani, 2012 p.126), the design and development of external areas including green areas, quiet areas and play areas are often overlooked (Tanner, 2000 p.313). Recommendations for investing in school grounds are still proposed by many; for example, it was raised as a design issue for schools during the BSF programme (DfES, 2002b p.34) and CABE (2010 p.36) proposed creating stimulating outdoor places to support the curriculum and provide children with varied, rich experiences. Outdoor classrooms, sports facilities, environmental education and the use of tree canopies, were all suggested for inclusion when designing primary schools. Research into the positive effects of 'biophillic' design, where nature is incorporated within building designs, is gaining momentum, suggesting that this can have positive effects on psychological, physical and social well-being (Heerwagen and Hase, 2001). The natural environment is also thought to stimulate social interaction (Moore, 1986 p.207) whilst encouraging positive feelings for each other (Moore, 1996 cited in White, 2004 p.6). It is also been suggested that natural environments provide a rich resource for learning (Malone and Tranter, 2003a p.289) and may lessen life's stresses on children (Wells and Evans, 2003 p.311). Following children's participation in a school design process, Ghaziani (2008 p.233) found that there were certain issues relating to the outdoor environment that were important for children including:

having access to landscape, areas for pets or animals, relaxing in appearance and views of nature. Furthermore, in a study with Danish teachers practising outdoor teaching, Bentsen et al. (2013) found that amongst the teachers there was also a preference for green space and the use of forests. However, Dutt (2012 p.200) notes the surprising lack of empirical research addressing the relationship of the school building and its grounds. Studies have shown that natural spaces can increase fitness (Foster, 2007), heighten concentration (Taylor et al., 2006), aid sensory development (Moore, 1993) and enhance creativity (Moore and Wong, 1997b). Dutt (2012 p.207) explored students' experiences of the natural world and found that they felt a "sense of freedom, moments of joy, social cohesiveness and aesthetic pleasure", recommending that wooded and planted areas on school grounds should be provided to foster these experiences. Furthermore, the 'Forest Schools' programme was developed, inspired by existing outdoor education programmes in Scandinavia, and is becoming widely adopted in the UK; an initiative which enables hands-on learning in natural or woodland areas allowing children to make meaning from their direct experiences (O'Brien and Murray, 2007 p.249). Not only does this have a positive effects on children's knowledge about the world around them, gaining hands-on experiences by physically engaging with the context (Kesby, 2007, O'Brien and Murray, 2007, Ridgers et al., 2012), but it has been shown to also have a positive influence on play experiences and social skill development (Ridgers et al., 2012 p.64). This section has provided a brief overview of literature surrounding school grounds and natural environments, however, studies in this field are far more extensive, it has been shown that natural environments are an important resource for learning (White and Stoecklin, 1998), play (Casey, 2005, Casey, 2007), well-being and child-development (Ridgers et al., 2012).

2.6 Post-occupancy evaluation of school buildings

Only after a period of occupation can the significance of a building's impact on the users be known. How building users perceive the space may alter over time, as Prost (2011 p.6) notes, "buildings, like cities, are living entities, change constantly in unpredictable ways and need to be constantly rethought through these cycles rather than simply built and demolished". It is important to document how the building is used by the occupants and the need for evaluation of education environments has

been recognised (Lackney, 2001, Sanoff, 2001a, Fisher, 2005). The information gained can be valuable to a range of stakeholders including the designers and the users themselves (Cleveland and Fisher, 2014 p.2). It has also been raised that not only should evaluation be sought in terms of measurable aspects but also on a social level (Lippman, 2010 p.1). Post-occupancy evaluation (POE) provides an opportunity to assess how well buildings are performing (ibid) by systematically assessing the extent to which buildings satisfy the intended goals and meet the needs of the users after occupation (Lackney, 2001 p.3). Therefore, POE can prove useful in suggesting improvements, including the design, program, construction and management of the building (van der Voordt and Wegen, 2005 p.142). However, evaluations of existing school buildings are only sporadically undertaken in the UK (Plotka, 2016 p.18). Currently, feedback is informally reported and piecemeal in nature (Stevenson, 2009 p.123). There is a need for the effective evaluation of school buildings, this need has been acknowledged by others (Lackney, 2001, Sanoff, 2001a, Newman, 2009). Traditionally, the evaluation of school spaces focuses on the technical performance and environmental conditions rather than perhaps the built environment's impact pedagogically (Fisher, 2005 p.159). Examination of the physical environment and any potential impact on learning is lacking (Lackney, 2001 p.4) and as (Sanoff, 2001a p.7) has suggested, evaluations of the facilities need to "describe, interpret and explain the performance of a school building", for both clients and building professionals alike. However, over the past decade, due to the investment in school building programmes in the UK, some attempts have been made to determine methods to measure "design quality" (CABE, 2010 p.10). Although, this remains a contentious issue, as appropriateness for one site may differ from another (ibid). Nevertheless, CABE recommend that by evaluating the exact needs of a building and assessing the design options available, there is potential to broadly assess the design quality through the adoption of 'Design Quality Indicators' (DQIs) CABE (2010 p.10). Even though there is a general lack of POE taking place in schools in the UK (School Works, 2004 p.2), there are some methods for evaluating school buildings available, some of which have been developed by governmental organisations and researchers. Table 2-3 below summarises the key resources available:

Author / Organisation	Title	Description
School Works (School Works, 2004)	Toolkit pilot in secondary schools	Developed with the support of the Department for Education and Schools, a pilot POE scheme for secondary schools was designed in 2004. The toolkit proposes running workshops with staff, students, the community, architects and a facilitator. It was thought to be flexible and could be applied to any type or size of school; it reviewed both hard and soft design issues; it was relatively quick and easy to use; and it sought to identify the major successes and failures in the building design (School Works, 2004 p.2) Recommended exercises for the workshops included: warm-up games, ranking exercises, active audits and surveys, mapping exercises, art and performance work and focus groups. The toolkit also provides example workshops which were used for the pilot trials. Aim of the toolkit was to develop a design brief and define indicators and benchmarks to measure progress and success of the projects.
CABE & Construction Industry Council (CABE, 2005) (CABE, 2010)	Design Quality Indicator (DQI) for schools	A tool which provides a framework for the assessment of school design. This tool was launched in 2005 and used during the BSF programme. Used for teachers, parents, governors, pupils, community, local authority and building professionals to achieve "design excellence" in new or refurbishment projects (CABE, 2005 p.7). Used in the initial stages to create a design brief, during the design process to assess the plans and again on completion to assess how well the building functions A trained DQI facilitator manages the consultation process DQIs evaluate: 'Build quality' (access, space, uses), 'Functionality' (performance, engineering, services, construction), and 'Impact' (school in community, in the school, form and materials, character and innovation)

Rokhshid Ghaziani (2009)	Children's and teacher's voices: A framework for school design (PhD thesis)	This PhD research developed a framework to be used for school design which aimed to bridge the gap between school users and designers. The research specifically studied pupils and teachers views on their school environments in order to develop a "generative tool" (Ghaziani, 2009 p.xi) to be used in the design process. The tools were developed following a review of secondary data, analysing the following studies: 'The School I'd Like' by Burke and Grosvenor (2003); 'Joinedupdesignforschools' by Sorrell and Sorrell (2005); and 'The Young Design Programme' by The Sorrell Foundation (2006 and 2007). Issues raised were then used for an empirical study that involved both qualitative and quantitative methods. The findings highlighted the differing priorities between adults and children with regard for the school environment. Outcomes of the study also led to the proposal of an "evaluative tool" (Ghaziani, 2009 p.xi) to be used for assessing quality of existing or new schools at various stages of the design.
Michelle Newman (2009)	Post-occupancy evaluation of primary schools: A multi-stakeholder perspective (PhD thesis)	This PhD research developed a post-occupancy evaluation toolkit specifically for primary schools in Coventry, UK. The research was developed by conducting an initial study on pre-1996 schools and the research to develop the toolkit then focused on five case study schools. The toolkit was developed specifically to address multiple stakeholders and the findings highlighted the variability in responses from the different parties. Newman (2009) proposed that the toolkit may be useful for architects and designs and proposes an approach to primary school design which considers individuality and context.

Table 2-3 Summary of resources and tools available for evaluating schools

Schoolworks pilot toolkit was focused specifically on secondary schools only and provided a series of options which lack details on the specific methods, whereas DQIs for Schools was more extensive. The DQI tool refers to specific details concerning the functionality, build quality and impact, however, it lacks an examination of how the building performs during its day to day functioning as a place for teaching and learning.

The DQIs do not seem to address the complexity of the school environment with seemingly vague questioning and a lack of concern for the different spaces (Newman, 2009 p.63). These methodologies are first implemented pre-design, in the brief development stages, and principles developed at this stage are referred to throughout the project, rather than a direct focus on the building once in-use. Therefore, if testing the building's relative success against the original parameters set out in the brief, it may satisfy these original goals easily. However, there is no consideration for any 'new' issues or impacts that may arise from the new school building itself. Furthermore, these toolkits are very 'broad brush' in nature, lacking specificity about the users' perspectives and experiences within the buildings and a lack of account for how to specifically engage young children.

In the USA, Sanoff (2001a) developed The School Building Assessment Manual, whilst intended for use in design processes for construction of new facilities, Sanoff also advocated the need for post-occupancy evaluation of schools. The assessment guide proposes surveys and discussion tools for the evaluation of K-12 schools (comparable to primary and secondary schooling in the UK). The aim being to assess what works and what does not work in those buildings (ibid), though the survey tools are, again, based on pre-determined topics. Methods developed by Ghaziani (2009) and Newman (2009) are comprehensive evaluation tools which seek to understand children's views on their school buildings. The framework developed as part of the study by Ghaziani (2009) was to be used in the early stages of school design to inform designers about the importance of issues in an existing school. As such, the tool is reasonably extensive in terms of the areas of the school environment that are covered. However, it is limited by the fact that the original questions grew out of previous data and therefore, the categories and issues were generalised within the framework. The study was limited to testing the framework in secondary schools on children aged 11-12 years old. The use of questionnaires is restricted to written questioning and responses; thus, it could be considered to have limited scope for allowing younger children to express their views and opinions more freely. Additionally, it lacks usefulness in terms of assessing the designs post-completion. Even though an evaluative tool was also proposed, this tool only assesses whether the building has met original objectives. Similarly, to the aforementioned tools, it fails to address potential 'new' issues which may reveal both positives and negatives of new school designs, when reviewed post-occupancy.

Newman (2009) recognised the gap in the literature regarding the lack of toolkits for POE, specifically targeted to primary schools and the lack of engagement of all stakeholders. The research undertaken by Newman (2009) developed a toolkit for use in primary schools, specifically investigating case study schools built under a 'model brief' in Coventry in the UK, obtaining views from all stakeholders. The model brief provides detailed design guidance with every aspect of the school building being covered, including materials, space requirements, equipment and specifications (Newman, 2009 p.218). As the post-occupancy evaluations were conducted in five schools built under this same brief, it could be said that this tool is limited to those buildings designed and constructed using the model brief. Developing a toolkit which spans this wide spectrum of people and ages is challenging due to the number of user groups targeted; including: teachers, parents, administrative staff, kitchen staff, lunchtime supervisors and children. Whilst there has been some thoughtful consideration for the workbook method adopted to engage with the children, the majority consisted of closed yes or no questions with limited scope to allow children to elicit their views more extensively as they were limited to text-based answers. This method only forms a small part of the wider toolkit (based largely on questionnaires) and thus, children's specific views may prove to be somewhat 'lost' within the data. Furthermore, Newman (2009) notes a lack of consideration for a 'sense of place' in the model brief. As such, this toolkit is somewhat limited by this, and there is a lack of opportunity to reveal users' feelings and experiences in the schools. Despite the positive work that has been undertaken by Ghaziani (2009) and Newman (2009), it remains that there is a paucity of research which is specifically focused on developing and refining methods for obtaining the perspectives from younger children in primary schools.

During the undertaking of this thesis, a move has been made to begin to evaluate some of the existing schools in the UK. The RIBA published a study which undertook post-occupancy evaluations on 129 primary, secondary and special educational needs schools, ranging from Victorian buildings to modern school buildings; the largest collective POE undertaken in the UK (Plotka, 2016). The study assesses the potential benefits of 'good school design' which were defined as: educational outcomes, teacher productivity and cost savings for running and maintenance of the schools. Findings suggested that good school design can have a positive impact on educational outcomes, behaviour, engagement and attainment; staff productivity; and reductions

in running and maintenance costs. However, it was suggested that there are early signs in the assessment of new schools that there is still room for improvement (Plotka, 2016 p.28). Although the definitions and framework adopted were reviewed by academics and the measures for educational outcomes were taken from recent research papers, it remains that this study imposed a specific framework onto the evaluation process and again, there is a lack of evidence of the voices of the users, in particular the children, and their experiences in the buildings, within the final report.

Following an examination of literature exploring approaches being adopted to evaluate the relationship between learning environments and pedagogy, it becomes clear that there is insufficient research in this area (Fisher, 2005, Cleveland and Fisher, 2014). Traditional evaluations attempt to assess the building as a whole system as opposed to a set of discrete components, recognising different user groups. However, considering the complexity of school buildings the challenge of dealing with multiple variables remains. Furthermore, it is proposed that post-occupancy evaluation techniques, should be conducted by directly involving the students and teachers in the approach (Fisher, 2005 p.166), as this may provide a more holistic and highly contextualised understanding of how a school building is used (Wheeler and Malekzadeh, 2015 p.14). Nevertheless, engagement of the users remains undervalued and under-used (ibid). There have been some efforts to develop post-occupancy evaluation techniques for school buildings, involving different stakeholders. However, as it has been highlighted in this section, there is a lack of research which seeks to develop evaluation methods involving children.

It is clear from the literature reviewed in this chapter that a gap exists in the literature with regard to evaluating new school buildings, more specifically, primary schools. Thus, methods of evaluation need to be rigorous in assessing both building conditions and the views of the users. Equally, there is a further gap in the literature that suggests there is a lack of post-occupancy methods, developed for use in primary schools, with specific regard for obtaining children's views. This research aims to address these gaps. Research that aims to investigate how school building users are practically using the spaces provided and to understand how the physical environment is impacting on them post occupancy, is of utmost importance.

2.7 Summary

The literature reviewed in this chapter considered school building programmes, design guidelines and initiatives, educational transformation, the impact of physical and environmental characteristics, external school grounds and post-occupancy evaluation of schools. Considering the wide body of research into education and school environments, it remains that there are issues within the physical environment as some of the conflicting evidence has shown. Studies reviewed have addressed physical and environmental aspects of the school environment and their potential impact on student achievement as well as behaviour and well-being. The research reviewed in this chapter has further emphasised the complexity of the challenges for school design, whilst identifying the need to continue to research and investigate how the users of school buildings experience these spaces on a daily basis. Concentrating on a single environmental factor does not necessarily provide the true picture of how the built environment can affect the people who occupy it.

Considering the changes in school design and the implementation of various school building programmes over the past 20 years, it remains that there will now be a "three tier school estate" with BSF and PCP new build schools, standardised and cheaper PSBP new build schools and some schools, yet to receive funding, in poor condition (Mahony and Hextall, 2017 p.95). Returning to the argument proposed by Edgerton et al. (2011) presented in the introduction to this chapter: we are failing to investigate the whole school environment. There is a lack of systematic, robust evidence from which guidance can be provided for both stakeholders and designers (Wall et al., 2008). It is necessary to address these issues, particularly with regard to new school buildings. Forms of POE could provide assistance in researching the physical school environment. It is clear that more evidence is needed to understand the effectiveness and impact of new schools (Plotka, 2016). However, there is an over-riding focus on the classroom environment itself with a lack of consideration for other spaces within schools. The classroom and learning space, will always be important to study, however, a need to assess the impact of all elements in the school environment, and importantly, from the children and students' perspectives (Edgerton et al., 2011, David, 1982). Although POE is beginning to become more common, and researchers have begun to develop evaluation toolkits for schools, there are significant gaps in the literature that have been outlined in this chapter. There is a paucity of current research

which investigates the impact of new school buildings on the users and there is a lack of research into evaluation methods that are specifically focused on obtaining children's views on their primary schools. Therefore, this research will address these gaps and will explore how new primary school buildings might impact on children's experiences in these settings.

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Chapter 3

Children and their environments

3 Children and their environments

"Built environments have both direct and symbolic impacts on children" (Weinstein and David, 1987 p.6)

3.1 Introduction

The review of literature on schools, in Chapter 2, concluded that further research is required which investigates the impact of aspects of new school buildings on the users, identifying a need for obtaining the users' perspectives; and more specifically the children's perspectives. There are two key aims of this chapter: Firstly, to discuss the wider connotations of the 'environment' and the implications for children's place experiences; and secondly, to explain why it is important to elicit and understand children's perspectives, particularly on their school buildings. Section 3.1.1 is an extended introduction that provides the background to this chapter. The chapter discusses what constitutes the term 'environment'; what constitutes a 'place'; issues of place attachment and place identity; and reviews literature on children's experiences in various environments. This is followed by the rationale for researching children's perspectives on their school environments which includes a section on policy and planning followed by a review of literature which highlights the importance of the school context in children's lives, drawing reference on the differences between children and adults' views. The chapter concludes by cross-fertilising the findings from the literature review in both Chapters 2 and 3, to clarify the gaps within the literature, and presents the necessity and ambitions for the research.

3.1.1 The influence of the built environment on children

For many years it has been widely reported that children's interaction with their local environment is a process that can enhance their development, through their interaction with surrounding context and resources (Moore, 1987). Early education theorists; for example, Friedrich Froebel, Rudolf Steiner and Maria Montessori, recognised that children learn from direct experiences with their environment (Dudek, 2000 pp.49-64). Influential education reformer John Dewey (1859–1952), explored new ways of teaching and suggested the importance of appealing to children's senses

(Dudek, 2007 p.18) whilst alluding to the role of the physical environment in the life of the child, specifically within the classroom (Dewey, 1915). Froebel and Steiner highlighted the importance of children's development through play; with Froebel also suggesting that their environment should be representative of the natural world and Steiner believed there should be a synthesis between the built environment and education (Dudek, 2000 pp.49-64). Whereas, Montessori emphasised the focus on space and learning in 'The Secret of Childhood' (Montessori and Carter, 1936), in which the curriculum puts significant importance on children's interaction with their environment. Children need to play, explore, test and learn from their exchanges with the surrounding environment (Moore, 1987). Additionally, it has been suggested that where active learning is practiced, children as learners are interacting with each other, as well as directly with their physical environment (Dyck, 2002 p.56). The pre-schools in Emilia Romagna, Italy, adopt the Reggio approach, which emphasises a philosophical relationship to architecture and learning where space becomes a key driver in pedagogy: the school becomes the 'third teacher' (Nicholson, 2005 p.44). The majority of these approaches and theories are concerned with the environments of the younger child but have also been adapted for older education (for example, Steiner schools in the UK, Woods et al. 2005). As Malcolm et al. (2011 p.6) note, the Reggio Emilia approach carefully considers the design of school spaces for evolving styles of learning, valuing space because of its power to "organise, promote pleasant relationships among people of different ages…provide changes, promote choices and activity and its potential for speaking all kinds of social, affective and cognitive learning" (Loris Malaguzzi, personal communication, 1984, in Edwards et al., 1998 p.133). Indeed, it is known that children's interactions and associations with their physical surroundings become the primary method in which they learn and develop (Tanner, 2000) and it is known that the environment can have "both direct and symbolic impacts on children" (Weinstein and David, 1987 p.6). Furthermore, There is evidence to suggest that a combination of factors within the realm of the socio-physical environment work together to enhance cognitive development (Moore, 1987 p.67). Considering the wide-ranging influences that children's surrounding environments may have on their lives, this chapter discusses literature on children's environments and their experiences, and why children's perspectives are important to research.

3.2 The environment, place and space

> *"Like our intimate social bonds…our relationship with the larger world is built from countless sensory interactions...the places in our lives get 'under our skin' and influence our behaviours in ways that we don't often expect"*
>
> (Gallagher, 1994 p.127)

3.2.1 What constitutes the 'environment'?

It is widely known children's lives can be significantly affected by their surrounding environment (Rivlin and Wolfe, 1987 p.90), and adults contribute to the design and modification of this environment (Martin, 2004 p.77). Following the literature review on school environments in Chapter 2 and the introduction in Section 3.1.1, this poses the question: what constitutes the 'environment'? The 'environment' is concerned with many inter-related factors: physical, social and cultural issues (ibid); as a series of relationships, as Rapoport (1990) describes:

> "…the environment can be seen as a series of relationships between things, things and people, and people and people…In the case of the environment, the relationships are primarily, although not exclusively, spatial objects and people are related through various degrees of separation in and by space" (Rapoport, 1990 p.178)

Furthermore, Rapoport (1990 pp.179-181) suggests that four elements: space (organisation of), time (organisation of), communication (among people) and meaning (communicated from the environment), are interrelated concepts that constitute the designed environment. The environment is a context that is constantly changing and holds a large amount of information which affects people in different ways (Bell et al., 1996 p.24). Therefore, the 'environment' is an all-encompassing term, a changeable system (Ghaziani, 2009 p.9) which becomes more than merely the organisation of space. Environmental research considers how the environment impacts on human behaviour. One of the main strands of environmental psychology concerns the notion of how attributes of the physical environmental context can affect behaviour and

mood. The various characteristics of environmental psychology are indicated in Figure 2-1:

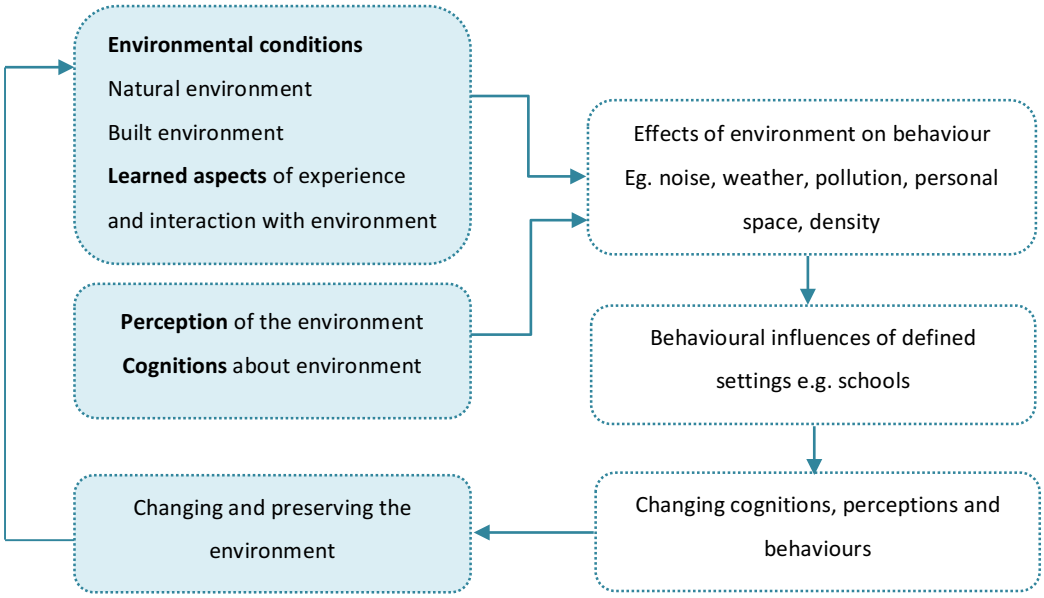

Figure 3-1 Characteristics of environmental psychology
Diagram adapted from Bell et al. (1996 p.24)

Stokols (1978 p.253) indicated that the study of environmental psychology provides an ecological perspective which examines "the interface between human behaviour and the socio-physical environment"; stressing that within the multi-dimensional environment, there can be linkages between various stimuli and human behavioural responses. Moore (1987) agreed with the notion that many interrelated factors in the environment are at play and in order to begin to understand environmental impact on behaviour, it becomes necessary to investigate a wide range of factors:

> "What seems to be necessary, in order to create a true environment-behaviour perspective...is to articulate the relevant dimensions of the designed environment that may arguably be thought to have an impact on cognitive development, to control for other aspects of the social organizational environment (e.g. teacher styles, beliefs, educational models, socio-economic status, family backgrounds) and to explore the complex interactions between physical and social environmental variables as the independently and jointly affect [children's] development" (Moore, 1987 p.51).

Research that addresses environment-behaviour connections and perceptions also extends to a person's attachment to a 'place' and the phenomenological examination of places (Bell et al., 1996). Considering the multi-faceted nature of the 'environment' and environmental psychology, it is necessary to conduct research that aims to understand how people and more specifically, children, interact with the surroundings that impact on their everyday lives. Within such research, factors that may contribute to forming a sense of place within a specific setting could also be addressed.

3.2.2 What constitutes a place?

It is necessary to discuss what constitutes a 'place' and indeed, how this may differ from the term 'space', in the context of this research. Adults and children alike build a sense of place through a variety of interrelated factors that instil memories and attachments to certain spaces. To describe the distinction between space and place, in line with thoughts by Ghaziani (2009 p.8): a space can be seen as providing the structural and geometrical elements of a physical environment, whereas a 'place' tends to include dimensions of interaction and the lived experience within that space. Thus, a space can be formed by the most basic of means, for example, four walls and a roof but a 'place' has meaning: "places are spaces with identity" (Day, 2002 p.120) or places can be seen as a space plus character (Norberg-Schulz, 1980 p.5). According to Canter (1977), place is a combination of actions, conceptions and the physical environment, locked inside the person experiencing it (Sime, 1986 p.55) and similarly, Relph (1985) shared this view, describing place as a "whole phenomenon, consisting of the three intertwined elements of a specific landscape with both built and natural elements, a pattern of social activities that should be adapted to the advantages or virtues of a particular location and a set of personal and shared meanings" (Sime, 1986 p.55). As such, Canter (1977 pp.158-159) suggested that in order to identify a place, knowledge must be acquired about the behaviours associated with a setting, the physical parameters of the space and the descriptions or conceptions people have for this particular behaviour in the given physical environment.

Relph (1976) was concerned with the phenomenological study of place and proposed that the authenticity of a place was dependant on the connection between the users

and the place, and that places are experienced either "authentically" or "inauthentically" (Relph, 1976 cited in Seamon and Sowers, 2008 p.46). Modes of spatial experience were also defined by Relph (1976), raising a distinction between "instinctive, bodily and immediate" or 'existential' space and the "cerebral, ideal and intangible" or 'cognitive' space; suggesting that they are not mutually exclusive, but rather they have inter-related roles in every day experiences (Relph, 1979 cited in Seamon and Sowers, 2008 p.44). There are many factors, also noted by Seamon and Sowers (2008), which can influence a person's perception of a place including; personal situation, abilities, likes and dislikes, culture, social, economic, education, religion, locale etc. which form an integral part of human experience, also noting the importance of the distinction between human experience and existence (ibid). Lynch (1960 p.9) suggested that images within the environment are composed of three interrelated elements: identity, structure and meaning. When looking at how the physical qualities of an environment might contribute to the identity of a space, it is necessary to consider "imageability: that quality in a physical object which gives it a high probability of evoking a strong image in any given observer" (ibid).

Architectural space, no matter what the building's function, will only begin to foster a 'sense of place' once it is populated with people. People experience any given building or space through a series of learned patterns, acquired from similar environmental experiences (Canter, 1974 p.163), thus a person's perceptions of a space can widely differ depending on previous personal experiences. As Norberg-Schulz (1980 p.18) suggested, the existence, and therefore purpose, of architecture is to transform a site into a 'place', by uncovering hidden meanings present within that environment, facilitating 'orientation' and 'identification'. Moreover, humans need to be able to orientate themselves and know where they are situated, whilst also identifying with the environment, as Norberg-Schulz (1980) described; "he has to know *how* he is in a certain place" (Sime, 1986 p.51). It is evident that there are various factors which simultaneously interact to aid the identification of 'places'. As Canter (1977 p.158) suggested, a place is formed from relationships between human behaviours, perceptions and physical characteristics of a space. Furthermore, the interaction of such components can also be linked to forming place attachment and place identity.

3.2.3 Place attachment and place identity

As people develop attachment to places they are also building their own 'place identity'. Prohansky, Fabian and Kaminoff (1983 p.59) proposed a definition of the term 'place identity', describing that a person's cognitions about the physical environment represent "memories, ideas, feelings, attitudes, values, preferences, meanings, and conceptions of behaviour and experience which relate to the variety and complexity of physical settings that define the day-to-day existence of every human being...". The notion of building place identity is related to the way in which environments offer phenomenological impact, creating feelings and emotions which can provoke attachment. Moreover, the attachment to a place can be defined by historical social interactions with the setting, rather than merely architectural aesthetics (Bell et al., 1996). Research into place attachment has shown that the strength and type of attachment can vary, dependent on factors associated with both the physical (or social) place and the people, with their own social characteristics (Scannell and Gifford, 2010, Lewicka, 2011). Recent studies relating to place attachment are wide-ranging and have been concerned with secondary homes, recreation spaces or temporary homes (Williams and Van Patten, 1998, Beckley, 2003, Stedman, 2006); sacred sites (Mazumdar and Mazumdar, 1993); working places (Milligan, 1998); and imagined places (Droseltis and Vignoles, 2010). Such studies are noted by Lewicka (2011 p.209) posing questions such as: "can one be attached to more than one place?" and "are non-places capable of triggering attachment, does place attachment change along with changes that places themselves undergo?". Questions such as these and the notion of place attachment, are necessary to consider in relation to children, as their experiences may be different to that of adults.

3.3 Children's place experiences

David and Weinstein (1987) noted that it is particularly difficult to measure the different attributes of a space that might impact specifically on a child's sense of 'place' suggesting that the "perceived environment...may well be as important as the objective environment" (Weinstein and David, 1987 p.6). However, when considering the definition of 'place', it has also been argued that there is less need to measure the objective relationship and moreover, research is required whereby an understanding of the nature of peoples experiences is the focus (Sime, 1986 p.60). Furthermore, Cele

(2006 p.194) suggests "children's place experiences are multi-dimensional, consisting of both concrete and abstract processes, places and objects" with interplay of physical, social and cultural characteristics. Cele (2006 p.194) describes 'concrete' experiences as being those experiences related to physical locality and with what a child may interact, whereas 'abstract' processes describe how places can make children feel, also referring to the imaginary and feelings of attachment, whilst acknowledging that these two processes are multi-layered and inter-dependant (ibid). The development of place identity, or indeed attachment to a place, is significant for young children. As they develop, children are building a sense of who they are, and it has been noted that the built environment can have both direct and symbolic impacts on this development (David and Weinstein, 1987 p.6-8). As children develop, they begin to relate to certain elements of spaces and begin to build their own "place identity" (Proshansky et al., 1983 p.59), where feelings, values and experiences of physical settings have a role to play in developing cognitions about the environment (ibid.). As young children spend the majority of their lives in school, questions arise that may have relevance for school settings and the buildings within them: do schools become meaningful places for children and do children form any significant attachment to these places? Within the realm of the main research question, there is potential to reveal insights into the spaces and places that children interact with and explore whether school settings may have any impact on place attachment for children.

Studies investigating place preferences of children and adolescents are limited, although some researchers have explored place preference with regard to specific consequences; for example, Korpela et al. (2002) investigated the role of restorative experience and self-regulation in place preferences of Finnish children; Abbott-Chapman and Robertson (2009) examined adolescents' favourite places for leisure pursuits and places that make them feel good; and Galindo and Rodríguez (2000) investigated environmental aesthetics and preference on well-being. However, researchers have sporadically involved children in research that wishes to investigate and understand their experiences and interactions with environments. Hart's (1979) study on children's experience of place consisted of a two year ethnographic framework investigating children's everyday experiences, in which children's ideas about 'place' were interpreted, through their knowledge of a place, how they use a particular place and their feelings about a place. Hart (1979) highlighted the importance of children's environmental knowledge and concluded that the most

important factor concerned with children's interaction with the environment, involved finding and making places for themselves, suggesting that multi-purpose, flexible spaces are required. Within the realm of urban design, Cele (2004) investigated how children interact with urban space; how they appear to 'sense' their city. Cele (2004 p.4) concluded that children's bodies become reference points in their experiences and that the identity of a place is not only formed on its appearance or how it is used but is also dependent on the sensory interactions. Additionally, in a study that explored methods for communicating place with children, Cele (2006 p.206) highlighted the importance of natural elements for children's well-being and their experience of place, with further emphasis on the sensory impact of the environment, notably sound and smell.

Furthermore, Loxley et al. (2011) explored children's perceptions of spaces and places in a Dublin primary school. Loxley et al. (2011) conducted research with a predominantly visual methodological approach. They argue that the findings emphasise the need to consider space as much more than merely the physical properties, but rather, its social constructions by students, reporting three main themes: privileged space; modelling adult space; and colonisation of space. It has been highlighted in Section 3.2.2 that the social dimension becomes important to address when considering issues of the physical environment, space and place. However, there is less concern in this study for the potential impact of physical characteristics. For example, under the umbrella of 'privileged space', there were spaces to relax and "for just chilling out and all" (Loxley et al., 2011 p.58) which prompts the question: *how* can a space facilitate this action and promote a positive experience for students? With reference to the aforementioned ideas of Canter (1977), it is possible that there is an interplay between physical attributes and actions in those spaces, that contribute to the perceptions and social constructions.

Children's perspectives are a rarely used resource when evaluating their environments and place experiences. There seems to be a lack of interest in obtaining children's views in research methodologies that address space (James, 1990 cited in Loxley et al., 2011 p.61) coupled with the belief that children's experiences are comparable to those of adults (ibid). Nevertheless, obtaining such information about places and spaces has potential to inform planning and design (Clark, 2007 p.4). The section that follows presents the rationale for eliciting children's perspectives.

3.4 The importance of eliciting children's perspectives

> *"Children and adults view the world differently. Buildings are designed by adults. But many, perhaps most, are used by children. When adults design buildings, practicality, energy-conservation, aesthetics and economy have major shaping influences. These are undeniably important – but have nothing to do with children's experience"*
>
> *(Day and Midbjer, 2007 p.3)*

3.4.1 Children's views in relation to policy and planning

The discourse surrounding children's rights, stemming from the Convention on the Rights of the Child (UNICEF, 1989), has led to children's views being sought in matter that affect them. As such, children's participation in decision making and planning has become more widespread over the course of twenty-five years, considering Article 12:

> "Article 12: States Parties shall assure to the child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child" (UNICEF, 1989 p.4)

It was proposed that the child is entitled to give his or her opinion on matters that affect them and convey information of all kinds, through oral expression, in writing, art or any other media (UNICEF, 1989). The well-established 'New Sociology of Childhood' is an important area of study, in which children are viewed as social actors and competent in making sense of the world and affecting societies (Matthews, 2007 p.324). This is significant, as there now exists a body of research which provides strong evidence of how children make sense of and construct their worlds (ibid).

Historically, there has been a drive for change with attempts to involve children, internationally, in decision making on matters that affect their lives. Adams and Ingham (1998) describe children's participation in simple terms: "participation involves consultation to clarify what young people's needs and aspirations are" (Adams and Ingham, 1998 p. 27). Whilst Hart (1992 p.5) suggested that participation

is “the process of sharing decisions which affect one’s life and the life of the community in which one lives. It is the means by which a democracy is built”. In England, in 2001, the Government objective specifically stated: to involve more children and young people in the “design, provision and evaluation of policies and services that affect them” (CYPU, 2001 p.2). Similarly, the *Every Child Matters: Change for Children* campaign was initiated by the Government in response to the Childcare Act 2004 (DfES, 2004c), whilst The Childcare Act 2006 also instructed local authorities to listen to children’s views in relation to services (Clark and Williams, 2008 p.2). Handbooks and guides have been published to encourage and promote a culture of participation in democratic decision-making, with insights into practice (Lansdown, 2001, Kirby et al., 2003, UNICEF, 2006, Percy-Smith and Thomas, 2009). More recently, The Children’s Rights Alliance for England (CRAE) released a report which addresses the ‘Government action on United Nations’ recommendations for strengthening children’s rights in the UK’, which notes significant progress with regard to the recommendation to “strengthen children’s participation in all matters of school, classroom and learning that affect them”, making specific reference regarding the future encouragement of participation of children with special educational needs (CRAE, 2013 p. 96).

Children’s participation is evidenced as far back as the 1960s, as noted by Francis and Lorenzo (2002 p.160) during what they call the ‘romantic realm’. Francis and Lorenzo (2002 p.157) argue that there are seven realms of participation: “advocacy, romantic, needs, learning, rights, institutionalisation and proactive”, suggesting that each has its own identity, theory and methods. There is a significant body of research within the realm of participation both in democratic processes as well as planning and design, which suggests the value this can have for the eventual output (Hart, 1992). Hart’s suggested ‘ladder of participation’ (Hart, 1992 pp.8-9) relates to the level of control that children might have over the participation procedure and the degree of empowerment, which needs to be carefully considered (Sinclair, 2004). Hart (1992 p.9) indicates that there are several types of participation which extend from ‘manipulation’ and ‘tokenism’ (little control over the process) to ‘child-initiated’ participation, where children can have full control over the process. Francis and Lorenzo (2002 p.162) define more recent participation as “proactive”, which relates to “participation with vision”, where research and participation are combined in the planning of environments, with the involvement of designers and planners.

Studies have addressed the needs of children, involving them in the planning of cities and spaces that affect them. Additionally, more and more communities are seeking to involve children in the design and planning of their environments. *Learning Through Landscapes* (Adams, 1990) was a significant research project which promoted involving children in the design of school grounds and the potential of this process to educate them, whilst the *Changing Places* study (Adams and Ingham, 1998) further investigated participation in planning and implementation in practice through a series of case studies. Francis and Lorenzo (2002) highlight the significant body of research and practice whereby children's views have been incorporated into policy making and city planning; for example, children's participation in making more friendly and sustainable cities (UNICEF, 2000) and Driskell (2002) explored methods for evaluating cities with children and the potential for providing improved environments. Within their critique of the seven realms of participation, Francis and Lorenzo (2002 p.157) suggest that "proactive" participation is "participation with vision", combining research, planning and action with engagement of children, adults, planners and designers. However, they note the challenges associated with this as it requires the skills and training to make it effective. Moreover, participation can also be beneficial for the children themselves, providing them a sense of belonging. Sutton and Kemp (2002) explored participation in neighbourhood place-making through hands-on design charrettes, engaging children as partners in design tasks:

> "Engaging children and youth in experiential learning enhances their sense of community, place, and belonging, as well as enhancing their lives. They learn that they have something to contribute and that they have the opportunity to participate in making a qualitative difference in shaping the places where they live" (Mullahey et al., 1999 p.6)

Studies where children are active participants in the research itself have become more common (For example: Lewis et al., 2004, Greene and Hogan, 2005, Christensen and James, 2017). Likewise, there is growing evidence to suggest that engaging children in research in the context of schools can be beneficial for design of such environments, as discussed in the section that follows.

3.4.2 Obtaining children's views in school contexts

Chapter 2 discussed the literature concerned with the impact of school environments, however, it remains evident that researchers have failed to completely investigate the relationship between the school environment and its users (Edgerton et al., 2011). It has been suggested that lack of evidence across the literature makes assessing the impact of new schools more challenging (Audit Scotland cited in Edgerton et al. 2011 pp.33-34). The complexity of the number of factors within the school environment that can affect individuals has been highlighted in Chapter 2, identifying the difficulty in ascertaining the effects of a single element through research. Nonetheless, it is also necessary to review studies and initiatives that have attempted to understand how children perceive, interpret and experience their built environments. This section proposes that by obtaining perspectives from the children themselves, it can reveal insights into the impact of various characteristics within the school context, emphasising the importance of eliciting children's views.

Dudek (2007 p.38) suggested that "the role of the interior of the school, takes on a more profound psychological significance than simply a machine for living in", taking reference from Roger Hart's environmental psychologist stance, that both the interior and exterior architecture of a school building should allow children to develop their "environmental competence" (ibid). As school buildings are occupied and used by a number of different people of all ages, there are a wide number of stakeholders for consideration. As noted by Day and Midbjer (2007 p.3), children view and experience the world and environment in different ways to adults. Additionally, Hart (1987 p.218) proposed that children are actually 'spontaneous' designers from as early as three years old, with places being 'found' rather than perhaps physically built. This further suggests that children experience their environments in different ways to adults and it is necessary to understand why such spaces become meaningful places for children. Weinstein and David (1987) first identified the need to engage in research on individual children and the way they interpret various environments, in diverse contexts. Adults' perceptions may be different from children's perceptions and it is important that their stories are heard (Eide and Winger, 2005 p.73). Careful consideration is required over their shared environments. Particular environments will hold significance for children that may be overlooked by adults. As Rasmussen (2004 p.165) argues, there is a difference between adult-identified "places for children" and

"children's places", which are defined by their physical interactions. It has been noted that spaces which appear significant in the lives of children, can be informal places which are often incidental and do not necessarily correspond with adult, or professional, concerns, often going unnoticed (Rasmussen, 2004, Simkins and Thwaites, 2008).

Benefits of children's participation and the positive impact on planning and design were advocated in *Spaces for Children* by Weinstein and David (1987). This seminal work focused on research that addressed small-scale built environments and aimed to stimulate advancement in the field and interdisciplinary dialogues. A key objective was to provide better understandings of children to enable designers to make informed decisions for their environments (Weinstein and David, 1987 p.xv). Subsequent research that followed, has explored ways in which to achieve this.

Studies conducted by Clark and Moss, focused on listening to children's voices and reporting on their interpretations of the environment by exploring children's experiences of spaces and places. In developing suitable methodologies in which to do this, the 'Mosaic Approach' was developed (Clark, 2004), where participatory methods were implemented across a number of studies. *The Living Spaces Study* (Clark, 2007), was concerned with involving young children (aged 3-7) in the planning and design of interior and exterior spaces, addressing three main themes: participation, built environments and social relationships. The study investigated two case studies, one of which was a primary school involving 23 children. A key research question asked: "*what does it mean to be in this place?"* (Clark, 2010 p.11). A research question such as this would perhaps seem to have limited scope for measurable outcomes and could be seen to be limited by the number of participants. However, Clark (2007 p.9) acknowledges that the study was not concerned with a typical hypothesis but rather, it was undertaken to explore how a particular environment was experienced by young children. There were three phases to the fieldwork carried out during the early design stages of the case study building. Research activities, informed by the Mosaic Approach, were designed to engage children in thinking about the existing and their new environments, including: tours, map-making, photo-books, model-making and interviews (Clark, 2007 p.8). Analysis of the qualitative data, led to emerging themes, which were used for further discussion with the architects to enrich the design process; including: personal markers, scale and perspective, legibility and privacy. To

summarise: 'personal markers' highlighted a link between children's feelings about the nursery and their sense of identity; 'scale and perspective' identified where the scale of the environment disadvantaged children; 'legibility' raised the importance of children feeling connected to other spaces; and 'privacy' covered a variety of meanings for children including being alone (Clark, 2007 pp.17-18). These findings raised issues which are not necessarily new design concepts. Nevertheless, the importance of these factors and the reality of these through the eyes of the children, may differ significantly from adult interpretations of the issues. For the second phase of this study, a post-occupancy review of a new build children's centre was undertaken, involving both adults and children, adopting creative participatory methods with the children aged 3 to 4 years old, resulting in further changes being made to the outdoor space provision. Evaluations such as these can become time consuming and complex processes. However, it highlights the extent to which children can be valuable informants about their immediate environments (Clark, 2007 pp.22-23) and can provide meaningful information in both design and evaluation processes.

Research that explores children's experiences in the wider environment, within the context of the school setting, can reveal thoughts and feelings about informal spaces, particularly those concerned with external spaces. Simkins and Thwaites (2008 p.531) emphasise the importance of 'incidental spaces' (DTLR, 2002 p.47) in the lives of children, contributing to their social development, health and well-being but noting the recent tendency for a loss of connection between children and outdoor (and natural) spaces. Furthermore, Thwaites and Simkins (2007 p.xiii) advocated that it is necessary to understand the significance of children's place attachment and their 'experiential landscape', by understanding how people attach significance and value to locations, orientate themselves and develop a sense of belonging:

> "Yet we can only learn the real significance of place attachment if we adopt methods that engage with children and are capable of revealing the subtlety involved in children's assignment of meaning to place through informal…social activity that is frequently overlooked by other methods" (Simkins and Thwaites, 2008 p.545)

By using participatory techniques to explore outdoor place experiences, Simkins and Thwaites (2008) sought to determine appropriate methods that can be used to give voice to children. In developing the multi-method participatory approach, including semi-structured interviews, cognitive mapping and drawings, the findings further emphasise the differences between children and adults' perceptions. The research highlights that places which have significance for children do not necessarily correspond with adult priorities; for example, discussing emergent themes relating to children's object specific experiences, their feelings and emotions, their imagination and their social networks (ibid). Thus, Simkins and Thwaites (2008 p.545) argue that it is necessary to advance knowledge of place attachment by engaging with children to unearth their spatial experiences, in order to create better environments for children.

Participation of children in school design processes was adopted in the early consultation for school buildings, which became more prevalent during the BSF programme (Woolner, 2009). Several initiatives throughout the UK were implemented during the 2000s, giving a voice to children and students, the aim being to better understand their needs for the design of the school buildings whilst others focused on policy in schools (Flutter and Rudduck, 2005). Initiatives have included: CABE Education Foundation's work with the BSF scheme (CABE, 2004), The Design Council's Schools Renaissance Project (Flutter and Rudduck, 2005), School Works and the development of a tool-kit and post-occupancy evaluation (Seymour and Lingayah, 2001, School Works, 2004), The Sorrell Foundation's Joinedupdesignforschools project explored user engagement in the design process (Sorrell and Sorrell, 2005) and some schools have undertaken their own student consultation processes. However, Flutter and Rudduck (2005) conducted a review of the aforementioned initiatives, concluding that the extent of students' involvement was limited, proposing that further research is necessary to developed a structure for participation to make improved school environments (ibid. p.6). Furthermore, Sanoff (2001b) advocates whole community participation in the design of schools in order to produce a 'responsive school', suggesting that a 'visioning process' is necessary. Sanoff (1994) proposed a design process for school design that involved teachers, students and parents, and proposed how relatively small-scale changes can have a positive effect on performance. Woolner (2009 p.2) notes the importance of how a participatory design process can assist with creating a building that fits the needs of the users which ultimately, can instil a sense of ownership.

Nevertheless, the extent to which children are 'participating' in the process has been criticised somewhat; the extent of the students' involvement can be limited to consultation rather than full participation (Flutter and Rudduck, 2005 p.6). Unless the participation of children is continuous throughout the design process, early consultation could be seen as merely 'tokenistic' on the 'ladder of participation' (Hart, 1992) (see Section 3.4.1). This may result in a lack of coherence of information being provided for architects and designers. It should also be noted that stakeholder participation in the design process does not necessarily guarantee the design being suitable for the end-user. The realisation of the previously mentioned 'Mosaic Approach' (Clark, 2004, Clark and Moss, 2005, Clark, 2010) was a key development, in that it successfully highlighted potential methods for including young children's perspectives in both the design and the *evaluation* processes.

Engaging in conversations with children about their school buildings, is an under-used process and is not always implemented to its full potential during design or evaluation processes. Insights into children's experiences are rarely considered of importance (Wheeler and Malekzadeh, 2015 p.4) and it has been shown that very few studies have investigated children's every day experiences of their school environments (ibid). Nevertheless, the literature reviewed in this section has presented a strong case for obtaining children's views on their environments. The differences between children's and adults' spatial needs and priorities has been raised. It has also been indicated that there is evidence to suggest, that by engaging with children, using well-considered methodologies, it can provide useful information in planning and design. As highlighted in Chapter 2, there is a need for eliciting children's perspectives on their schools as part of post-occupancy evaluation processes. The necessity for the research of this thesis is confirmed in the section that follows.

3.5 Conclusions: Necessity for the research

> *"Children and the way they live in places, build relationships, and learn are not always the primary starting point of reference guiding the various phases of school design and construction"*
>
> *(Vecchi, 1998)*

3.5.1 Necessity for the research: Why is the school context important?

School buildings are where children spend most of their daily lives and as Sanoff (1994 p.41) has suggested, in addition to learning, it is an environment where children also devote time to "living". Every day environments impact on humans in a multitude of manners, thus, school settings can also have an impact on children's learning about the place and the world around them:

> "...the very fabric of the school building can teach children about many things which will be important ideals which they can grasp and hold onto throughout their lives...a plea for a better understanding of place, to enhance environmental literacy as part of the evolution of education towards a more humane individual framework which reflects the profound social changes which have taken place over the past 25 years" (Dudek, 2005 p.45).

Considering the literature reviewed, it is evident that previous attempts have been made to consider how children's environments affect them physically, socially and psychologically. School buildings provide the setting for both learning and living; Ghaziani (2012) agrees that the school itself is not merely a space for curriculum based learning, but also a 'place' where many alternative activities take place and children are socially developing whilst building self-identity. It is significant to note that the school is a socio-physical setting, important in the development of self-identity (Proshansky and Fabian, 1987), and similarly, Boocock (1973) has suggested that the school functions as a social environment in which learning takes place. Children begin to understand their surroundings and make sense of the place by looking at both their

physical and social environment, which can also affect their behaviours (Martin, 2004). A gap within the literature has been identified, as there is a lack of research that provides evaluation of schools whereby children's experiences and the social context are considered. This gap in the literature may be in part, due to the complex nature of the topic and challenges associated with measurability when attempting to understand experiences. Nevertheless, it is important to consider the impact of the social organisation of children's spaces in addition to physical environmental qualities (Rivlin and Wolfe, 1985). Furthermore, it has been suggested that the development of place identity and place attachment is significant for young children, as the physical environment can have an impact on building a sense of who they are. Therefore, the school environment, where children spend a large proportion of their lives, has the potential to play a role in place attachment.

In reviewing the literature on school environments (Chapter 2), it became evident that a range of physical and environmental elements are interrelated, which can, to some extent, have an impact on behaviour, attitudes and experiences (Weinstein and David, 1987, Tanner, 2000, Darmody and Smyth, 2012). However, it has been highlighted that much of the evidence is inconclusive (Higgins et al., 2005b p.37) and this stems from the fact that many of the issues with school environments depend on the context within which it sits, emphasising the need for user engagement in defining and solving remaining problems in school buildings. As school design has undergone such radical transformation over the past two decades, it is necessary to discuss to what extent, further research is still required. Have we achieved the inspirational school environments that were intended? Malinin and Parnell (2012) have alluded to the fact that, even now, people can become heavily influenced by pre-conceptions of what a school should be like, whilst Leiringer and Cardellino (2011 p.918) highlight that concerns have been raised that there is a lack of research providing convincing evidence that new schools have actually impacted on teaching in practice as was the original intention for educational transformation. Due to the increase in design and research within the context of schools and the ever-increasing rate at which technology is advancing, inevitably, this means continuous evolution of the curriculum and associated pedagogy. Therefore, new school buildings and settings are essential to research. Coupled with the necessity to understand the social context within the school environment, further research is required, to complement the existing body of information and to inform the next wave of school improvements.

3.5.2 Necessity for the research: Importance of obtaining children's perspectives

In this chapter, the importance of understanding children's perspectives on their experiences has been raised. The central discourse surrounding the participation of children and the notion of children's rights is exemplified by the United Nations Convention on the Rights of the Child (Articles 12 and 13). There is significant body of literature where children have been involved in planning and design of environments that affect them. However, Francis and Lorenzo (2002 p.167) question the aims of children's participation, alluding to the necessity for children's views to inform the design of better places: "Is children's participation a way to create a more democratic world? Or is it a way to simply create better places for children?". Clark et al. (2005 p.2) emphasise the importance of obtaining children's views on matters that affect them and research concerned with children's perspectives has been influential in establishing useful research tools (see Chapters 4 and 5 for examples).

Listening to children's views about their environment has been shown to be important. Extensive literature argues that children's interactions with their local environments can have significant impact in the early stages of their young lives. The built environment may be perceived by children in multiple ways and it has been suggested that children view and experience the world and environment in different ways to adults (Day and Midbjer, 2007 p.3). Furthermore, children's views and their interpretation of their perceptions has been shown to differ from adults' understandings (Eide and Winger, 2005 p.73). Enabling adults to understand children's experiences, their 'sense of place', their needs and wants and the social context of the school setting, could provide useful information in design of new schools. Studies discussed in Section 3.3 reveal the reality and importance of what matters to children; such as informal, incidental spaces (DTLR, 2002, Simkins and Thwaites, 2008) and issues of place attachment. Thus, it is essential to find new ways of understanding children's experiences of spaces and places to inform future design of their environments. However, there remains a lack of empirical studies that provide collective evidence to strengthen the argument for obtaining children's views and, therefore, a wider range of empirical studies where consultation with children is the focus, is of paramount importance.

3.5.3 Necessity for the research: Relevance for design of new schools

For over twenty years, numerous efforts have been made to undertake consultation with children and other stakeholders in design processes, however, the question that arises on reviewing the literature, is whether this has provided architects with meaningful information. Clark (2010 pp.96-97) argues that research which attempts to understand children's experiences has the potential to provide valuable information for architects and designers. Yet, Steg et al. (2012 p.91) identify that "a gap exists between building designers and building users". McClure and Bartuska (2011 p.46) suggest that, in many designs for buildings today, there is an emphasis on aesthetics at the expense of function and that there should be more consideration given to the needs and behaviours of the end users of a new building. At the root of understanding the long-term impacts of a new school building on its users, is the need to formulate an understanding of the current situation and how these environments are impacting on the present users that occupy them. In contrast to involving the users in the design process, it is equally important to document how the building is used by the occupants; not only in terms of physical measurable aspects but also through direct discussion to obtain qualitative feedback about the social environment (Lippman, 2010 p.4). Post-occupancy evaluation is important in order to suggest improvements including; the design, program, construction and management of the building (van der Voordt and Wegen, 2005). However, there is a lack of research on exploring children's views about their environment, as Ghaziani (2010 p.29) has also indicated. Moreover, there have been difficulties in facilitating children's participation in school design, which has been suggested to be 'tokenistic' in some cases (Woolner, 2011).

Much of the literature relating to the impact of school environments provides information on how physical or environmental factors can affect motivation, achievement, behaviour and well-being (Darmody and Smyth, 2012 p.181). Yet, it is evident that there is a paucity of research that aims to understand how children (and teachers) experience the impact of these factors during their day to day lives at school (Darmody and Smyth, 2012 p.183), or in other words, consideration of the social impact of these settings and the potential effects on well-being. Therefore, a further gap in the literature needs to be addressed: there is a need to understand the holistic

impact of factors in existing school environments, on children during their daily lives at school.

It was identified in Chapter 2 that there is a paucity of research involving children in the evaluation of new school buildings post-occupancy. As such, in the context of this study, it will be necessary to draw on children's first-hand experiences within these environments. It has been suggested that by investigating children's experiences in places and spaces in both school environments and the wider school grounds, it can provide valuable information for the design of such environments. Research can reveal clues about the areas of those environments that are most important to children and the ways in which the environment may have an impact on their experiences at school. Ultimately, studies that provide insights into children's experiences and feelings, and a detailed image of children's knowledge of places, could produce useful information about areas to be prioritised in design processes, for children's environments (Clark, 2005). By creating a substantial body of knowledge about children's experiences at school, within some of the current school building stock in the UK, it could aid architects and designers in future school design processes.

3.6 Summary

This chapter has provided an overview of the reasons why it is important to elicit and understand children's perspectives on their schools. The importance of the environment in children's lives has been raised including issues of place identity and place attachment. Studies that have explored children's place experiences have been identified, however, it has been shown that there are a lack of studies obtaining children's perspectives on their environments.

The background to children's rights and participation in decision-making, research, planning and design has been presented. A review of key literature concerned with children's experiences in the context of schools has also been discussed and has revealed there can be differences between adult's and children's spatial and environmental preferences and concerns. Such studies have argued that by understanding children's experiences it can provide valuable information for design processes.

Children have been participating in planning and design for some years, yet children are still rarely used as a resource in evaluating new buildings. Furthermore, children's perspectives have been shown to be an under-used resource in the evaluation of school environments. Nevertheless, there are a wealth of methods and tools within the literature which may be adopted and utilised in the evaluation school environments going forward.

Finally, the rationale for undertaking research that wishes to understand children's experiences of their school environments has been discussed in Section 3.5. Gaps in the literature have been identified and this section has highlighted the key ways in which the literature across Chapters 2 and 3 have led to the framing of the research questions for this study.

Chapter 4

Evolution of the research and study design

4 Evolution of the research and study design

4.1 Introduction

The methodology is presented in two chapters: this chapter describes the rationale and approach to the research, the underpinning theoretical framework, the pilot study and evolution of the research design; and Chapter 5 discusses the research methods, implementation and data analysis process.

Alongside conducting the literature review, scoping visits to local schools were conducted, culminating in a pilot study, discussed in this chapter. The pilot study was designed, initially, to explore various methods in order to develop the research methodology and proved to be a key stage within the research as it additionally led to refinement of the research questions, as noted in Chapter 1. Therefore, the pilot study, whilst undertaken at an early stage, became a driver for the design of the study and became the initiator for adopting a grounded theory approach.

The nature of the qualitative paradigm is discussed, including the philosophical assumption for the study and the key principles of grounded theory. Reflections from the pilot study are discussed in terms of the evolution of the methods undertaken and the development of a phased research design. The rationale for the selection of case study sites and participants concludes this chapter.

4.2 Qualitative paradigm

The research question aims to explore new primary school environments specifically from the children's perspective and considering the children's day to day experiences of their surrounding environments at school. Due to the subjective nature of the enquiry, the research lends itself to a ***qualitative*** research design. Corbin and Strauss (2015 p.16) suggest that qualitative research advocates a "desire to step beyond the known and enter into the world of participants, to see the world from their perspective and in doing so make discoveries that will contribute to the development of empirical knowledge". The nature of a qualitative study aims to create an understanding of the participants' social world through investigation and interpretation of their experiences (Bryman, 2016 p.380), with an emphasis on obtaining as many different views and

perspectives on the topic as possible (Corbin and Strauss, 2008). It became clear from the literature review, that participatory studies are fundamental in order to begin to understand children's views and experiences in their environments as the importance of valuing children's perspectives has been highlighted in research in recent decades (For example: Titman, 1994, Clark et al., 2005, Clark, 2010, Christensen and James, 2017). By undertaking a study which is participatory in nature, it will allow for the children's voices to be truly heard within the research.

Qualitative research is underpinned by epistemological and ontological assumptions, dependent on the research aims and the researcher's own philosophical viewpoint. The researcher designs the study, collects the data and interprets the data, which makes the researcher a significant part of the research process (Corbin and Strauss, 2015 p.3). Thus, the researcher's assumptions become paramount to the qualitative study design and it becomes important to discuss the theoretical underpinnings and assumptions when proposing a research study (Creswell, 2012 pp.18-19).

4.3 Theoretical underpinnings and assumptions

The philosophical background and methodological approaches that have been adopted to address the research questions are presented in detail throughout this section. The philosophical standpoint of the researcher and theoretical underpinnings guide the research methodologically and throughout data analysis. Therefore, to justify the adoption of a particular research methodology, it becomes essential to discuss the researcher's assumptions about reality, what human knowledge is and what it entails (Crotty, 1998 p.2). The theoretical underpinnings for this study are described in such a way that the methods, methodology, theoretical perspective and epistemology are all inter-related elements (Crotty, 1998 p.4). The approach being adopted is summarised in Figure 4-1:

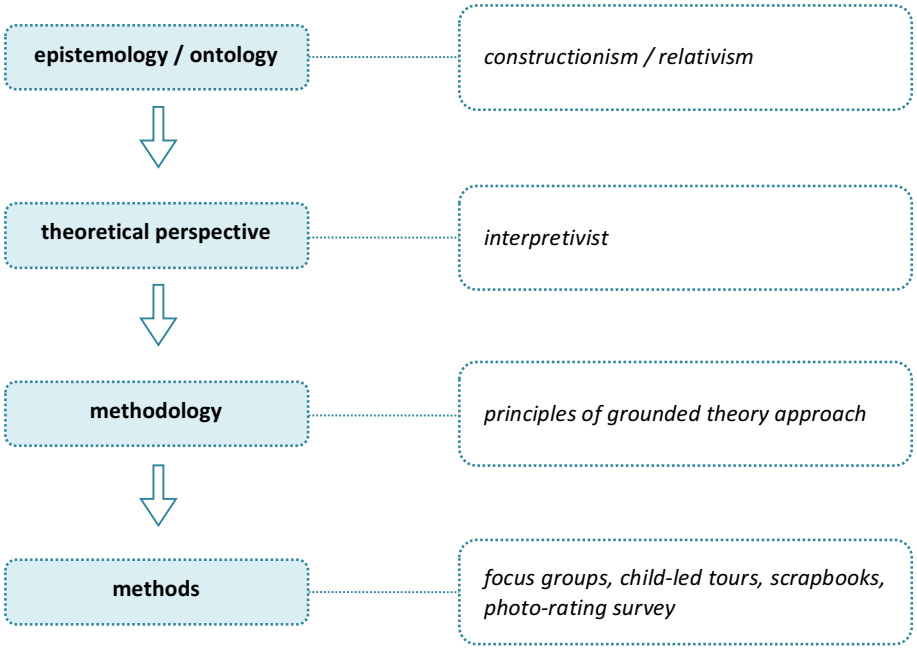

Figure 4-1 The research approach (figure adapted from Crotty, 1998 p.5)

Considering the research questions wish to understand how elements of the environment impact on occupants, the nature of the required outputs from the research may have social and experiential connotations. The questions seek to understand how the environment impacts on the children, whether that be practically, experientially, emotionally or physically and each of the participants may have differing perspectives on this. A person's culture, social background and environment may affect the way in which their experiences are perceived and interpreted by themselves. When undertaking research, an individual's interpretations of the world have to be considered, as this is the only thing that can be known with certainty; the world cannot be known independently (May, 2011 p,13).

As Creswell (2012 p.20) describes, conducting qualitative research embraces the notion of there being multiple realities, different researchers assume different realities, as do the participants. An ontological position is concerned with the nature of being and in particular, '*what is reality*' (Crotty, 1998 p.10), the relationship between the world and human interpretations and whether someone believes that reality exists separately from human understanding; in other words, determining what is real. Epistemology is concerned with defining what counts as legitimate knowledge (Bryman, 2016 p.24), dealing with the nature of knowledge and '*how we know what*

we know' (Crotty, 1998 p.8). As such, both epistemology and ontology are interconnected, expressing philosophical ideas which inform the theoretical perspective (Crotty, 1998 p.10) that guides and shapes the research. For this research, a relativist stance has been assumed in terms of an ontological position, informed by constructionist epistemology.

Relativism proposes that observations cannot be accounted for independently of the way they are interpreted and that the truth is always 'relative to' the theoretical framework underpinning the research (6 and Bellamy, 2012 p.55). Key characteristics of the relativist ontological assumption is that reality is subjective and multiple as seen by the participants (Creswell, 2012 p.21). As Blaikie (2007) notes, it produces 'relative' knowledge, alluding to the notion that there is the possibility of varying truths dependent on an individual's view of reality. Constructionism is an epistemological stance that is closely linked to the relativist viewpoint and is concerned with humans making sense of the world, 'constructing meanings' by direct engagement with their environment (Crotty, 1998 p.43). By adopting a constructionist epistemological approach, as Crotty (1998 p.9) notes, meaning is not discovered in research but rather 'constructed'. The researcher's aim is to make sense of (or interpret) the meanings that others possess about the world, whilst inductively developing a theory and identifying patterns of meaning from the data (Creswell, 2013 p.8).

It is important to note that these philosophical assumptions apply to the researcher's stance when designing and conducting the research. However, these viewpoints will also be important when considering the participants' interpretations of the world and constructing meaning from the observations. These assumptions align closely with the nature of the research being conducted, by adopting qualitative participatory methods, there will be multiple participant meanings produced which will provide subjective meanings of experiences. Perceptions and experiences of the school environment and elements within these environments may be constructed in different ways, dependant on several factors, including the environmental context and social background of an individual.

4.4 Methodological framework

Whilst introducing the methodology, it is necessary to set out the theoretical perspectives and associated framework, from which the methodology has been born. The research methodology has adopted principles of a grounded theory approach. This has shaped and influenced the choice and use of the specific methods and the inductive data analysis process. Grounded theory was first defined by sociologists Glaser and Strauss in the 1960s and 1970s, with the aim of moving towards more explanatory theoretical frameworks (Glaser and Strauss, 1998, Groat and Wang, 2013).

Coupled with an overriding grounded theory approach, the research also enters the realm of phenomenological enquiry: as one of the research aims is to investigate and understand a person's or child's experience of spaces, the aim is to "attempt to see things from that person's point of view" (Bogdan and Taylor cited in Bryman, 2016 p. 27) . In addition, as part of the phenomenological approach, a key focus is on children's understandings and interpretations of their social environments (May, 2011 p.13). However, the researcher must maintain an objective view when trying to understand participants' interpretations as Schwandt (1998) has noted, phenomenological research is challenging because of the *"*paradox of how to develop an objective interpretive science of subjective human experience*"* (Schwandt, 1998 p.221). As Creswell (2012) notes, the phenomenological research approach focuses on the meaning of individuals' experiences whereas by adopting the principles of grounded theory, the intent goes beyond the mere description of this information and moves towards discovering a theory or generating an abstract analysis of a specific finding. The key principle is that the theory is not proposed but rather 'grounded' in the data provided by the participants (Creswell, 2012):

> "Grounded theory differs from other approaches to research in that it serves to explain the phenomenon being studied. The strategies used in data collection and analysis result in the generation of theory that explicates a phenomenon from the perspective and in the context of those who experience it. Theory as the product of the investigative processes is the hallmark of grounded theory research. This theory is directly abstracted from, or grounded in, data generated and collected by the researcher" (Birks and Mills, 2011 p.16)

The challenge becomes more complex, as Groat and Wang (2013 p.229) suggest the difficulties of being objective are heightened when architects become the researchers, as there is a danger that the architect would have pre-determined ideas. In this instance, this challenge is precisely why the research here is of great importance, as it is necessary to determine what the users of architect-designed spaces really feel and experience once they are in use. Thus, ensuring neutrality and minimising potential bias needs to be considered. By conducting post-occupancy research which explores how children in different settings relate to and perceive their school environments, it will provide useful information for designers, with the opportunity for comparison of different settings. Various methods that are interrelated will be used, to assist with the construction of meanings when considering groups of children in different settings. In the same way that a grounded theory approach is an iterative process (Groat and Wang, 2013, Bryman, 2016), the research methodology adopts a similar framework throughout. By conducting an initial pilot study, it allowed the research methodology to evolve, enabled the testing of different participatory methods and allowed for evaluation of these approaches, in order to identify and mitigate potential biases throughout the process.

Within a grounded theory research framework, as part of the inductive process, it is useful to obtain a wide range of data, with respect to the research questions. Corbin and Strauss (2008 p.28) highlight the importance of obtaining multiple perspectives in conjunction with building an understanding of the "…larger social, psychological, political, temporal, economic and cultural context" in which the human responses are formed. In contrast, case study research obtains data from a singular or modest number of cases and by focusing the research in this way, it allows a deeper understanding of the case and its context (May, 2011 p.228). Case study research focuses on subject matters where there are complex, interrelated factors, allowing the development of a theory, from emerging ideas, considering all interactions (6 and Bellamy, 2012 p.103). Considering the complex nature of school buildings and the fact that the research aim is exploratory in nature, it was considered by the researcher, that the most appropriate way to address this would be by examining a number of case study sites, the aim being to obtain multiple children's perspectives. Addressing the research questions, the study lends itself to some of the principles of a case study approach, as Yin (2014) notes, a case study method is used where the research is

intended to explain 'how' or 'why' questions, requiring in-depth analysis of social phenomenon. By spending significant time in schools, it would allow the researcher to develop a deeper understanding of the context and how these schools operate, providing an understanding of the richness and complexity of the environment in a holistic manner (6 and Bellamy, 2012 p.79-80). Studying different sites would also allow for any comparisons between data sets to be made, if it became appropriate to do so during data analysis.

A typical case study approach would consist of *"*the detailed and intensive analysis of a single case*"* (Bryman, 2016 p.66). The most significant issue with case study research, that some report, is that by studying a single case or cases, that the outcome of the research cannot be generalised and applied more widely (Yin, 2014, Bryman, 2016). However, in this research, it was necessary to look at several cases, addressing differing school buildings, which would mitigate some of the issues that there would be if considering only a single case (Yin, 2014). However, it should be noted that even though the case study schools were selected according to specific selection criteria (see Section 4.9), the generalisable nature of the findings would not necessarily be possible. Limitations to the study are discussed in Chapter 10 and factors affecting the transferability include: limited number of cases being studied, the similarity of locations within sub-urban areas in one county and the relatively small sample size at each school. Nevertheless, as Bryman (2016 p.67) suggests, the benefit of conducting a multiple case approach is that it can improve the theory being generated, allowing the researcher to use the information generated by comparison, to aid in establishing theories. Another strength of this method is that it allows the researcher to be immersed into a real-life setting (Yin, 2014, Bryman, 2016), thus enhancing the connection with the participants and allowing the researcher to have direct contact with outcomes of participatory studies. Participatory and visual methods were to be adopted in the study and the following section describes the rationale for the use of participatory methods.

4.5 Adopting participatory methods

As the research aims to understand children's views and experiences of their school environments, direct engagement with the children as participants for the study is

necessary. Furthermore, understanding their experiences is important, as Malone (2007 p.16) notes, they are not passive actors within these environments as they "are constantly negotiating and reconstructing spaces in powerful and significant ways". Within the realm of social research, and in particular the qualitative paradigm, forms of participatory research are common. For example, researchers tend to interview and conduct focus groups whereby a direct engagement between researcher and participants is created, however, research that is participatory will also actively involve the participants in knowledge creation as opposed to knowledge gathering (Veale, 2005 p.254). Participants become more than sources of data but rather a two-way process evolves, promoting inclusion and developing a dialogue between researcher and participants, in order to aid the interpretation of meanings (Jordan-Zachery, 2009 cited in May 2011 p.21). The aim was to ensure the researcher obtained an holistic view of the context and ensure that there was an evolving dialogue created between researcher and the children through active participation throughout the process.

Reviewing the literature on children's participation in research, planning and design, there is a plethora of methods that can be considered for engaging with children and to obtain their views on the environment (For example: Clark, 2004, Lewis et al., 2004, Clark et al., 2005, Clark, 2007, Clark, 2010, Ghaziani, 2010, Joubert, 2012, Herssens and Heylighen, 2012). Across the reference studies, children's views are obtained, children's experiences observed and participatory tools and methodologies have been explored. There are two distinct types of methods for involving children: 'evaluative' and 'creative' (Ghaziani, 2010 p.5). For this study, the intention is to use a combination of these types and some of these methods were trialled in a pilot study (see Section 4.6).

Several of the aforementioned studies were used as reference projects, when developing the methods for this research, most notably, 'The Mosaic Approach', as described in Chapter 3 (For example: Clark, 2004, Clark and Moss, 2005, Clark, 2007, Clark, 2010, Clark and Moss, 2011). This approach, developed by Clark and Moss in 1999-2000, was initially an exploratory study listening to children as part of an evaluation of an early childhood institution (Clark, 2004), focused on nursery aged children, 3 to 5 years old. The approach combines traditional methods of observation, and interviewing with participatory activities (Clark, 2005 pp.31-33). Participatory

methods included: child-led tours and photography, map-making and drawings. However, the approach has been adapted and adopted for further research and of particular interest, was a study relating to a primary school building (Clark, 2010). By obtaining information on children's views and experiences, this information has been used in the design process and methods have been used in the evaluation of a completed building (Clark, 2007). Although children consulted were of a younger age range, the benefits of using multiple methods to provide an understanding of the children's perceptions of the environment is relevant for this research project, and as such, the principle of adopting different methods was explored. Furthermore, Simkins and Thwaites (2008) investigated various participatory methods, developing a multi-method approach that can be used as a tool to facilitate children's involvement in the design of their urban environments and wider school grounds. Reference to Clark and Moss' map-making exercises were made, as Simkins and Thwaites (2008) developed methods including: semi-structured interviews that used visual tools such as maps and images, and group mapping and drawings, where children graphically expressed their neighbourhood experiences. As such, it was indicated that the multi-method approach allows for further details and 'difference' to be revealed, providing a more complete picture of the phenomenon as each method reveals a different layer of information (Simkins and Thwaites, 2008).

These approaches were concerned with using appropriate methods that could capture children's experiences and their knowledge or feelings about environments which they frequent in their daily lives (Clark, 2004). When developing the phased research design, taking reference from the literature was imperative to the process. The aforementioned studies have shown that by using a variety of methods it is possible to collect a wealth of data which can address research questions that wish to obtain children's perspectives on their environments and provide a more complete picture of the phenomenon being explored. Following the trial of methods in the pilot study, additional child-centred methods and factors were considered (Hill, 1997, Lewis et al., 2004, Greene and Hogan, 2005, Christensen and James, 2017) and more specifically the implementation of additional visual research methods (Prosser, 1998, Banks, 2001, Thomson, 2008), which are described in more detail in Chapter 5.

4.6 Pilot study design and implementation

The pilot study was designed and carried out at an early stage within the research in order to aid the development of the research methodology. As Crotty (1998 p.13) suggests, rarely a piece of research adopts a certain epistemological position as a starting point, but rather research projects begin with a real-life issue or question that must be answered, thus, at the outset, it begins with the methods and methodology. As such, it was essential to explore a series of methods to progress the design of the study in more detail. A series of initial scoping visits and a pilot study were developed in 2014, initially as exploratory tools to understand the context in more detail and to trial methods. However, the pilot study proved to be of considerable value and became a significant driver for the study. Therefore, the design of the pilot study, methods and procedures are described in detail in this section, with the reflections and findings providing an insight into the evolution of the research methodology and final study design, which is described in Chapter 5.

4.6.1 Background to pilot study

Considering the wide ranging and complex nature of school environments, it was deemed appropriate to conduct scoping trips to various school buildings (as noted in Chapter 2). Visits to schools were undertaken during the period from January 2014 to June 2014 in parallel with reviewing the literature on school environments. The visits were aimed at gaining a more detailed understanding of the contexts within which the research was to be conducted. The observations and conversations carried out became a key driver for the way the research evolved and the development of more specific research questions which would frame the study. The following section describes how the pilot study shaped the research and developed additional research questions, aiding development of the methodology going forward.

The opportunity arose in June 2014 to undertake participatory research in one of the schools that had been visited during the scoping study. The school was currently housed in two Victorian buildings on one site and they were due to be moving into a new school building, on a completely different site, at the start of the new academic year, in September 2014. As such, the researcher embraced this opportunity, planning and conducting a pilot study in a one-month period, with an intensive week of data

collection, prior to the end of the school year. It was envisioned that there was potential for a 'before and after' study once the new school had opened the following year. It is important to note that the pilot study was conducted early in the research process, where the research questions were still being refined due to the continuation of the literature review. This section describes in more detail the nature of the pilot study and how it framed the research going forward.

4.6.2 Purpose and nature of pilot study

The pilot study was conducted over the course of one week in July 2014. As previously noted, the main aims of the pilot study were to test out certain research methods whilst also aiding the refinement of the research questions. The purpose, therefore, was not only for the researcher to trial specific methods, but also to build an understanding of what data it was possible to obtain. The hope was that it would also allow the researcher to assess whether the aims and objectives for the research were appropriate and achievable going forward. Conducting a pilot study enabled the researcher to assess the use and implementation of methods, including participatory research, in particular with children of different ages, interviews with staff members and conducting observation. The key aim was to gain an understanding of how the users of the building perceive and use their environment, identifying their likes and dislikes within the current school.

4.6.3 Recruitment of the school and participants

The school was recruited through an architect at Nottinghamshire County Council and had initially been visited during the scoping study. The Head Teacher was interested in taking part in the research due to moving to the new building, to see how the transition affected the children. Therefore, it became essential to conduct the pilot study before the end of the school year. There was limited time to plan the pilot study and make considerations for the ethical issues that surrounded participatory research in schools. The participatory research methods that were selected to be trialled initially, were based on the literature that had been reviewed to date; for example, studies by Clark and Moss (2011).

Sample size for the pilot study was intended to be approximately six interviews with staff members (including teachers, teaching assistants and admin staff) and participation of approximately twenty children. Children consulted were from Years 2, 3, 4 and 5 and were aged between 6 to 10 years old. Children of different ages were selected as participants in order to investigate with which age group the methods worked best, and if there were any other conclusions to be made from this to aid the selection of participants going forward. These numbers were arrived at by creating a timetable for a week-long study which included timings for various observation sessions, lunchtime or after school interviews with the teachers and participatory activities with children.

Ethical approval was awarded for the pilot study and consent to participate in the study was gained from the school, parents and the children themselves, in line with University of Nottingham ethical procedures (see Section 5.6 for details).

4.6.4 Selection of methods and activities

Following the review of the literature surrounding methods and discussions with the deputy head teacher, it was determined that it would be beneficial to carry out the following methods: non-participant observation, child-led tours of the building, focus groups with the children and conduct interviews with staff members (refer to Appendix B). This translated into five key activities, the details and eventual participants are outlined in Table 4-1. The implementation of each of these methods is summarised in the sections that follow.

Method	Type of participant	Actual number of participants	Location	Method of recording data
Interviews	Staff members	5	n/a	Digital audio
Child-led tours	Children	8	n/a	Video
Photo elicitation interviews	Children	8 (same 8 children as above)	n/a	Video & audio
Focus Groups	Children	15	n/a	Audio
Observation	Staff & children	n/a	8 classrooms 1 playground (playtime) 1 secret garden (lunchtime)	Field notes

NB: Other general observations were made in all areas and recorded in field notes

Table 4-1 Pilot study methods and participants

4.6.5 Method 1: Observation

Non-participant observation was selected to be conducted as it would allow for the researcher to develop a familiarity with the context which would aid conversations and discussions to be had later in some of the other methods. Casual observations would also be able to continue throughout the fieldwork (Creswell, 2013). As Silverman (2011) notes, it is beneficial to conduct a form of observation prior to interviewing any participants. Advantages of conducting observation include: the researcher has first-hand experience with participants (and within the context); information can be recorded as it occurs; and interesting or unusual observations may come to light in the field (Creswell, 2013). However, as Creswell (2013) also notes, there are limitations to the method including the fact the some participants, more specifically children, may present issues due to researcher presence. Nevertheless, it remained important to conduct observations in the pilot study to understand whether this would indeed prove to be an issue. The observation was also a way to gain an insight into how children and teachers were using specific spaces within the school.

Understanding how the school operates on a day to day basis would be essential to understand some of the descriptive qualitative information to be obtained. In addition, by conducting observation it would allow the researcher to assess whether useful information about children's experiences of spaces could be provided by using this method. If non-participant observation was to be adopted going forward, it was the intention that it would provide a validity check and essentially aid triangulation of the data (Oblinger, 2006) as observational records are often used to provide additional information about the study topic (Yin, 2014).

Non-participant, unstructured observation was conducted within classrooms, circulation spaces and external spaces. Observations were recorded on the following: methods of teaching within a classroom space; how children were interacting with the space; and the behaviour of children in areas of the school. Factors relating directly to the physical environment such as light, ventilation, and thermal comfort were also observed. Observation notes and sketches were made in a fieldwork notebook and photographs were taken to record the physical environment. Observations were conducted at lunchtimes and break times, in playground areas, over the course of a single week. Observations were also made by the researcher during the busy before and after school periods, these observations were written up after the researcher had left the site but on the same day.

4.6.6 Method 2: Child-led tours and photography

By conducting child-led tours, using photography, it allowed children to "explore their way of seeing and what was of value to them" (Ghaziani, 2010 p.6), it also allowed the researcher to see the environment from the child's point of view and reveal what is important within an environment. A child-led tour, coupled with the photography method, can help researchers to understand a child's knowledge about their environment using both verbal and visual techniques whilst walking through a space (Clark, 2010 p.36), as such, this method was to be trialled in the pilot study. Photography is used by researchers to begin to understand children's experiences, providing a "thinking device" (Clark, 2010 p.30). Photographs taken by children can provide a platform for knowledge construction about objects, places and people that are important in their everyday lives and environments (ibid). For example,

researchers have sought children's views in the context of school design (Clark and Moss, 2011, Ghaziani, 2010) whilst it has also been used by Herssens and Heylighen (2012) to understand blind children's haptic spatial experiences in their school; Joubert (2012) adopted the photo-voice method to understand children's life experiences in their urban environments and Clark-Ibáñez (2008 p.95) used photo-elicitation interviews to understand "bad students'" experiences in an inner-city school in the USA. Children become active participants in the research process (ibid.) by reviewing the photos or making mind maps using the photographs; a method similar to that developed in the Mosaic Approach (Clark and Moss, 2011). Commonly, when using photographic methods in research, children are asked to take photographs of places they like or dislike which can then be verbally discussed with the children. This technique was necessary to use to begin to unpick children's experiences in school in order to begin to answer the research question. By initially taking photos of places or elements they like or dislike, these photos then become a starting point for discussion, improving the interview scenario by providing a "clear, tangible prompt" (Clark-Ibáñez, 2008 p.103). As children are creating their own visual images, it provides an opportunity to represent experience (Leitch, 2008). The photo-elicitation that follows, provides a wider narrative and becomes a topic for broader story-telling from both the child and the wider community of participants (Burke, 2008). The photos are used as a tool for communication and they can have special emotional qualities which can reveal stories about children's experiences (Joubert, 2012). Discussions during the elicitation seek to provide an explanation of the photos; provide the insight into why the child may have chosen to photograph and their associated experiences; determine the importance of certain elements in the picture; and avoid misinterpretation of the image (Prosser, 1998, Coates, 2004, Ghaziani, 2010), whilst reinforcing information obtained through other methods (Clark, 2010). Children become the experts in describing the details and their experiences, which naturally disrupts any potential power dynamics between the researcher and child participant (Clark-Ibáñez, 2008 p.103). Issues of power relations are discussed in Section 10.4.6.

Following discussions with the Deputy Head teacher, it was determined that 2 to 3 children per tour group would be appropriate for both logistical reasons and to ensure clarity of participant voices. The tours lasted approximately forty minutes each. Children were free to choose their route through the school and they were given a

digital camera to use to record spaces they liked and disliked. Conversations with the children were recorded with a video recorder and notes taken after each tour to note any specific moments of interest. After the tour, the visual collection of likes and dislikes were used as a prompt for discussions with each child, reviewing the images on an iPad. The photo-elicitation was either audio or video recorded as the researcher tested out which method was appropriate for recording the discussions.

As the children were asked to take photos of aspects of the school that they liked and disliked, the aim was to understand how the children felt about different aspects of their school environment and the things that are most important to them in their day to day life at school. As noted previously, this provided a body of photos for wider narratives to be revealed during the elicitation, which might provide deeper understanding about their experiences. Children begin to tell stories of their favourite places, at times leading the interviews themselves (Joubert, 2012) and this can become a starting point for further discussions with the researcher (Waller, 2006).

4.6.7 Method 3: Creative focus groups with children

The final method involving children adopted for the pilot study, was the use of focus groups. When considering several methods to pilot, there was the underlying intention that the methods would need to play to children's strengths and capture the essence of their engagement with the physical environment through creative means (Clark, 2004 p.144). In addition to the child-led tours, the researcher wished to explore children's drawings and their representation of physical space; as Simkins and Thwaites (2008 p.535) suggest, in the context of urban design research, drawing techniques can be effective in determining how people view surrounding environments. Focus groups are commonly used to facilitate reaching participants that are usually more challenging to access; for example, working with children (Barbour, 2008). Focus groups were deemed an appropriate method in which to facilitate a set of drawing tasks, allowing children to take part in a group activity and for them to feel more at ease with the researcher as opposed to an interview-style situation (Simkins and Thwaites, 2008). Focus groups would also enable free discussion between the children and allow the researcher to ask unstructured, informal questions about the drawings whilst in-situ. It was important to note that focus groups are likely to

encourage lively debate between children, this could lead to participants influencing each other (Barbour, 2008). However, it was the intention that this debate might reveal thoughts, ideas and experiences which may not necessarily be discussed through other methods, these informal discussions have the potential to reveal more about their associations with the environment and if there are any shared meanings about certain places at school. It was also the desire of the researcher to understand whether children responded to activities better in groups of two or rather a larger number as a group, and whether more than one visual or creative method would be necessary to work in conjunction with each other.

Focus groups involved four or five children, with a series of drawing tasks, and lasted up to an hour in duration. A large sheet of white paper was placed in the centre of a table and the children were asked to draw pictures of their favourite and least favourite parts of their school building using different prompts; for example, draw your favourite place at school. Informal questions and discussions were conducted with the children whilst they were drawing. Some of the questions were identified prior to running the focus group as prompts for the researcher (see Appendix B), whereas some of the questions evolved as the activity progressed and different topics arose. The discussion was audio or video recorded which allowed the researcher to test out the use of different recording methods. The sessions were run in an available quiet space in the school and the drawings produced were photographed after the sessions for further review later. Prior to conducting the focus groups, the researcher undertook an outreach project at a local primary school, running a design and modelling workshop for 8 to 10 year olds. Gaining experience working with the children aided the wording of question prompts. The language used for questions and prompts was also reviewed by a paediatric nurse prior to implementation.

4.6.8 Method 4: Semi-structured interviews with staff members

For practical reasons, such as the difficulty of gathering groups of staff together at one time, it was determined that individual interviews would be preferable. Barbour (2008 pp.113-114) notes that one on one interviews are one of the most commonly used methods in qualitative research, allowing for narratives to be offered, providing relevant and rich data when implemented effectively. Semi-structured interviews were the chosen type of interview, as the researcher felt this would create more of a

two-way dialogue, allowing for deeper elicitation of participant responses whilst requiring 'active listening' by the interviewer (Silverman, 2011 p.166). Semi-structured interviews are conducted with an interview guide which contains topics or open-ended questions that the researcher has developed but the interviewee has freedom in how they respond (Bryman, 2016 p.468). Prompts delivered by the researcher ensure that the interviews remained focused on key areas of interest to the research questions.

Interviews were conducted with 6 staff members; this included teaching staff, teaching assistants and a member of the admin team. The aim of the interviews was to find out about how they used their current teaching or work space, how they felt about the school generally and what they hope the new building will bring to aid their everyday working life in school. To ensure that the semi-structured interview discussions remained on topic it was therefore necessary for the researcher to carefully consider the interview topics and guideline questions. The interview guide can be found in Appendix B and prompts were related to the following topic areas:

- The general school environment
- The classroom or work space and its pros and cons
- The new school building and improvements you hope to see
- The participant's thoughts on what makes a good school

Interviews were audio recorded, these backed up by notes taken during the sessions. The interviews took place at convenient times for staff, in any space that was available in the school and the duration of each interview was around 30-40 minutes.

4.6.9 Summative reflection on the methods

The pilot study was analysed in terms of efficiency and effectiveness of the research methods as well as the appropriateness for the main research question and key aims. The physical data collected was used as a starting point to examine whether there may be some meaningful data that could begin to answer the research question. Additionally, if successful, the pilot study data would potentially be useful for future comparison with the new school building (if this school were to become part of the main data collection). Planning and conducting this study, also provided a good

exercise into understanding the logistics of conducting the data collection phases, dealing with potential issues, participant recruitment and selection, ethical issues and considerations and the practicalities in terms of organising participant availability to minimise disruption in the school. In order to justify research methodology, a reflection on each of the methods trialled is summarised in the following sections with considerations for the research methods going forward.

Summary of issues and considerations raised from method 1, **Observation**:

- Observations were not necessarily conducted to their full potential due to time constraints and the arrangements became ad-hoc due to school's requirements
- Researcher's presence in the classroom at times caused disruption in lessons due to children approaching the researcher to ask questions
- Observation sessions required more focus - what exactly was to be observed within a classroom or playground environment and should there be specific subjects of these observations?
- Open-ended observation checklist proposed for the methods going forward, allowing for different school contexts
- The question of whether observation as a method was necessary for the main data collection or whether it should be conducted as a scoping stage to allow familiarisation with the context
- Methods of recording the observation data and the way in which this data would be analysed needed to be considered prior to the adoption of this as a method

Summary of issues and considerations raised from method 2, **Child-led tours:**

- Tours were video recorded and this proved to be invaluable for documenting the process. Although, this was not without its practical difficulties; for example, if children opted to go in different directions on the tour it was challenging to record everything, thus there was some unavoidable loss of data

- It became necessary to give each child on the tour a digital camera and to review both sets of photos with the children which meant the tours were longer than anticipated
- Reviewing the photos on an iPad was of significant value, as children could instantly see the images and wanted to explain why they took specific photos
- The method of reviewing the photos on the iPad was adapted due to the quantity of photographs taken by children. Children were asked to select only 10 photos where large numbers of photos had been recorded.
- Photo reviews were conducted in pairs and it proved to be beneficial to hear the other child's views on the photos; something which had not been anticipated. However, this was to be carried out with caution as some children attempted to influence others' photo-elicitation

Summary of issues and considerations raised from method 3, **Focus groups:**

- Drawings in the focus groups proved very useful for prompting vibrant group discussions, however, development of drawing prompts was required during the sessions
- Additional drawing prompts were created as children completed drawings quickly and it was determined that more time was required to build a rapport with the researcher
- Terminology of the drawing prompts required further refinement to enable children's understanding, dependent on the age of the child
- Allowing flexibility in the focus groups for children to draw and discuss their own related topics was also important as it enabled the group to feel relaxed
- The audio recorder had to be moved around the group to pick up quieter voices which inevitably meant that there was a loss of others' voices on the recording
- The audio recorder was seen as a novelty and at times caused distractions
- Logistical issues in finding appropriate space in which to run the sessions at the school

Summary of issues and considerations raised from method 4, **Interviews:**

- Question prompts trialled required refinement and re-ordering
- Distinction was required between questions concerning the school *building*, the school *ethos* and school *community*
- Confusion over the term *environment*, whether this was the building or the school in general
- At times, responses revealed information about certain spaces in a positive or negative light. It was felt that some of this information had the potential to alter the position of the researcher when discussing things with the children in other activities.
- Logistical issues in finding appropriate time and space in which to run the sessions at the school

4.6.10 Considerations for the methodology

To summarise, the list that follows highlights key points that were considered for the design of the research methods:

- Power relations: Some of the children were looking up to the researcher as a person of authority at times. To mitigate this, a 'getting to know you' session could be conducted prior to commencing the fieldwork.

- Objectivity: When conducting conversations with young children it is essential that adults do not assume they know what a child means and researchers should listen to all things that are said, or unsaid or that are unexpected (Thomson, 2008). It was necessary to ensure that further probing was carried out to ensure all responses were explained by the children.

- Specificity: Interview prompts or focus group prompts would require refinement. Considerations included; the use of appropriate child-friendly language, specificity of the questions or prompts and additional content that may be required.

- Observation: There was a need to allow enough time in the schedule to conduct the observations whilst ensuring there was sufficient time for

reflection on those observations. It was deemed necessary to pre-determine the specifics of the subject matter of the observations and review the need for this method within the study. As Creswell (2012) suggests, an observational protocol should be designed as a method for recording the data.

- Photography: When conducting the review of photos on the iPad it would be necessary to find appropriate locations to do this and specify the number of photos the children could discuss for time management reasons. Analysis of the total collection of photos taken by the children at any school required further deliberation.

- Multi-method approach: Evaluate the interaction of these methods and determine whether they can corroborate each other or whether additional methods, (e.g. questionnaire) may be required for triangulation.

- Administration: Filing of data needed to be completed every evening on the days the fieldwork was carried out so it was essential that the timing of the fieldwork stages would allow for this. Considering the naming of files would be important for later transcription and transformation into data analysis.

The majority of the issues raised during the pilot study could be reduced and mitigated with careful planning and a few amendments for practical implementation. The following section discusses the implications of conducting the pilot study on the research questions.

4.7 Refinement of the research question

The pilot study amassed a significant amount of data over the course of the week and an initial review of the data was conducted to establish methods for transcription and data analysis. Data collected from the pilot study was transcribed in Microsoft Word and preliminarily evaluated through the tabulation of the textual and visual data, from which, initial categories became apparent and further questions began to develop. The emergent findings and observations assisted with the refinement of the research

questions. In summary, by conducting a pilot study early in the research process, it has assisted in shaping the research in the following ways:

1. Identified and tested appropriate methods in readiness for carrying out fieldwork
2. Refinement and adaption of research methods
3. Logistical planning and practical considerations for implementation of the methods
4. Adopting principles of a grounded theory approach, the pilot study led to further research questions

Creswell (2013) describes how open-ended questions are shaped as the research progresses, with questions evolving in line with theoretical assumptions and the emergent methodology adopted. With reference to Figure 4-2, it follows that interpretations can be drawn from data collected which are then related back to theoretical work, leading to tighter specification of the research questions, prior to collecting further data. This is also typical of a grounded theory approach.

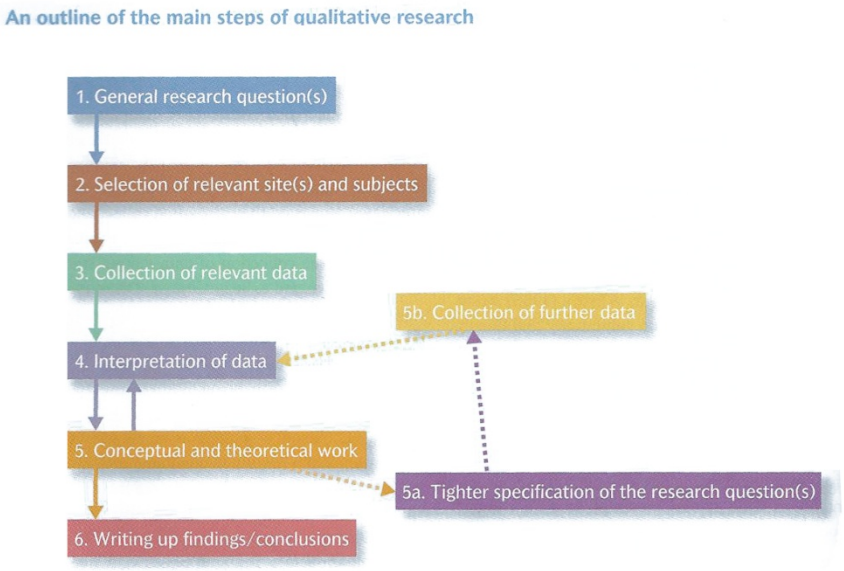

Figure 4-2 Main stages of qualitative research (Bryman, 2016 p.379)

Key categories that emerged following the initial review of pilot observations, focus groups, child-led tours and interviews included:

- Internal spaces and external spaces
- Types of space and their uses for children
- Environmental considerations
- Physical and spatial needs of children
- Place experiences through narratives
- Social needs

This list of categories, borne out of the pilot study information was reviewed in conjunction with the literature and as such, it became clear that expansion of the main research question was necessary. From the over-arching research question: "***how do new[1] primary school environments impact on children, from their perspective?***", three sub-questions evolved:

1. **What factors in a new* primary school environment are considered important to children?**
2. **How do environmental and physical characteristics affect children at school?**
3. **How can the school environment affect children's place experiences?**

By considering these key research questions, it tightened the research focus in terms of forming an understanding of children's experiences within the school environment. However, it is important to note that these research questions did not limit the extent to which the data was analysed and interpreted. A grounded, inductive approach was adopted for data analysis, beginning with initial coding, in which the researcher stays open-minded, generating many ideas and codes through a detailed review of the data (Bryman, 2016) (see Section 5.7). In addition, by collecting data which considers factors that are important to children, it was intended that this information could be cross-examined in conjunction with other findings, to address the holistic impact of

[1] *New school buildings are defined as those that have been built as total new build or newly extended within the last 15 years.

new school environments and ultimately, provide useful insights for the future of primary school design. Following the pilot study and the evolution of the research questions, the main research study design was implemented in phases which are discussed in the section that follows.

4.8 A phased research design

As discussed, the pilot study was a key driver in the evolution of the research design and became the starting point for establishing a grounded theory framework. During the pilot study, additional questions arose and it was apparent that some of the interesting findings should be tested further, as the study progressed. In addition, there were logistical concerns to consider, and it therefore became clear that a phased research design was required for this study. The scoping visits and pilot study indicated that there was a need to become more familiar with the context and therefore, it was necessary, prior to conducting participatory studies, to undertake an initial phase of observation in schools. This would enable a greater understanding of the whole school environment and aid the posing of questions for the later interviews or focus groups. It would also benefit the researcher when interpreting children's answers during the discussions. By designing-in an initial observation period, considering the need to address outstanding questions arising from the pilot study data and identifying the potential influences of seasonal weather on the child-led tours, this contributed to the development of the phased research design, adopting a grounded theory approach. Figure 4-3 provides an overview of the phases of the research and summarises the methods that were to be implemented at each stage of the main study.

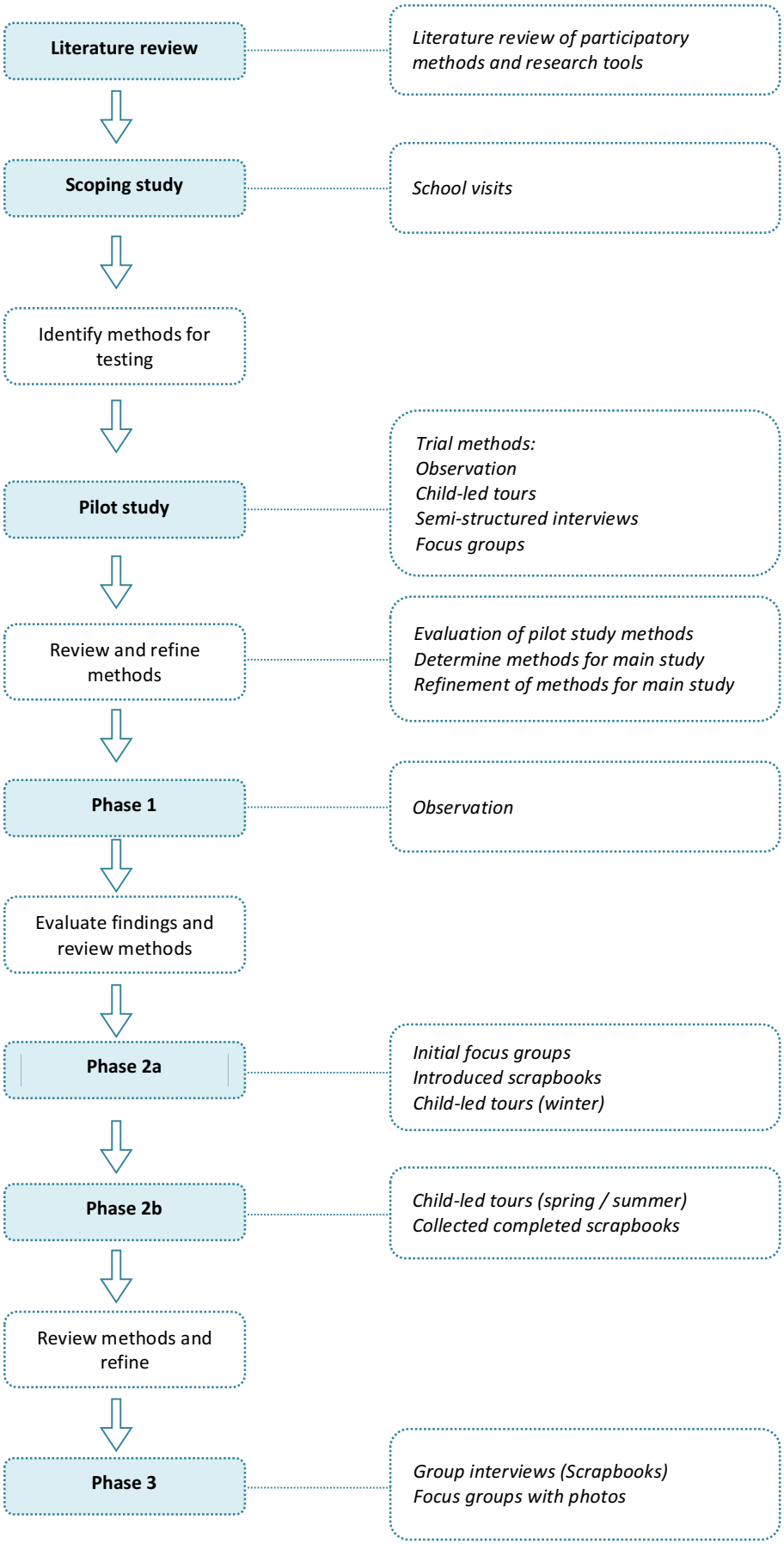

Figure 4-3 The phased research design

In utilising grounded theory principles, a phased research design is well suited to the features of the methodology. It was intended that the data collection phases and research analysis would be interrelated, with concepts being developed from each phase of data that were to form the basis of the delivery of the subsequent phases, an ongoing cycle throughout the research process (Corbin and Strauss, 2015). To obtain an in-depth understanding of the children's perspectives on primary school environments, it was necessary to implement a series of methods to undertake the research. This also became apparent during the pilot study which revealed that, by using different methods, it enables all participant voices to be heard whilst assisting with triangulating the data. Research was to be conducted at case study sites and it would be necessary to investigate children's views and experiences in different school environments. This would allow any commonalities within the data to become apparent, and at the same time it would allow for casual comparison between each school. As shown in Figure 4-3, methods included observation, focus groups (with drawings and scrapbooks), child-led tours and group interviews. By adopting a multi-method approach, it would provide a wide range of evidence, which allows for the development of many "converging lines of enquiry", ensuring triangulation of the methods (Yin, 2014 p. 120). Triangulation results in more accurate conclusions and enhanced validity when research is based on a variety of sources of information (Yin, 2014, Bryman, 2016). The rationale for the selection of the case study sites and recruitment of participants is outlined in the following sections.

4.9 Selection and recruitment of case study schools

Four case study schools were recruited for the study, in order to obtain a range of children's perspectives. When adopting a case study style approach, it is not always necessary for these cases to be representative of the wider population (6 and Bellamy, 2012). In qualitative research, the data can often be obtained from more than one case and it is rare that these cases are selected at random and commonly, a case is chosen simply because it permits access to the desired participants (Silverman, 2011). However, it is necessary to consider whether the cases that are chosen for examination would allow any conclusions for the wider context; for example, cases could be chosen because they possess features or elements that are more widely found and their typicality deems them appropriate to be studied (6 and Bellamy,

2012). The focus was to find schools that would allow the researcher access. A form of purposive sampling was implemented, where cases are carefully chosen because they illustrate a feature or process that is appropriate to the research, thinking critically about the parameters (Silverman, 2011).

A list of all primary schools within Nottinghamshire was initially drawn up to begin the process of case study selection. By conducting further research, this list was then reduced to a shortlist which indicated schools that had been newly built, refurbished or extended over the last fifteen years and school building programme periods were noted (if applicable). At this time, the researcher contacted local architects, past colleagues within the construction industry, organisations and Nottinghamshire County Council in order to establish any connections to viable potential case studies; a form of opportunistic sampling (Bryman, 2016). Nottinghamshire County Council architects initiated contact to three of the schools, as they were interested in the research having existing building projects evaluated. The fourth case study school was identified through a personal colleague, an architect working on schools with Inspired Spaces. An education-led group, set up by developer Carillion, to deliver 'educational transformation' during the Building Schools for the Future Programme. However, there were certain criteria that it was necessary for the case studies to meet, limiting external variables, as shown in Table 4-2:

School case study criteria
The school had to be a primary school
School had to have been newly built or has had a new extension within the last 15 years
School had to have an OFSTED rating of 'Outstanding' or 'Good'
School had to be accessible within a reasonable distance from Nottingham
Head teacher had to be willing for the school to participate
Within the pool of case studies there would be various design characteristics (see Table 4-3)

Table 4-2 Case study selection criteria

It was necessary to consider both 'outstanding' and 'good' OFSTED rated schools to allow more scope for gaining school participants within Nottinghamshire. Each school was visited for a meeting and tour of the school with the person in charge (either Head teacher, Principal or Deputy Head), to discuss the research and the potential of being

used as a case study for the duration of the research. During the face to face meeting at each school, potential options for the research methods were also discussed.

4.9.1 Case study sites and characteristics

Initially, the aim was to recruit three case study schools. However, four schools were selected to continue with planning the study to mitigate any potential attrition of a complete case or individual participants, prior to conducting the fieldwork. Table 4-3 provides a summary of the final case study primary schools selected to participate in the research. A description of each school is provided in Chapter 6.

Case study	Location	OFSTED rating (2014)	New build /extension	Year complete	Architects	Design characteristics
Sch A	Nottinghamshire	Good	New build	2014	Nottinghamshire County Council	Two wings connected by heart space
Sch B	Nottingham city	Good	New build (BSF)	2010	Capita Architecture	Learning hubs around courtyard
Sch C	Nottinghamshire	Outstanding	Extension	2007	Nottinghamshire County Council	Victorian building with new build "learning ark"
Sch D	Nottingham city	Outstanding	New build	2008	Nottinghamshire County Council	Round plan with extension

Table 4-3 Characteristics of the case study schools

4.9.2 Recruitment of participants

Following the pilot study, it was determined that the older age range of participants would be more suitable for the study. This was due to several reasons and one of the key considerations was time; the amount of time taken to explain some of the tasks led to sessions taking significantly longer than intended, which was deemed undesirable for both teachers and the researcher. Additionally, the older children had more confidence in responding to the researcher, enabling more detailed answers to be provided for some of the questions. It was, however, interesting to note some of the differences between age groups. Therefore, it was appropriate to recruit

participants across two year groups; year 4 and 5 with children aged between 8 to 10 years old. The original aim was to achieve up to 64 children as participants to the study (based on length of time to conduct the fieldwork, analysis of the fieldwork and size of schools), across all study sites, which would allow for some contingency of children who may decide later not to participate or children being absent. The actual numbers of participants recruited are indicated in Table 4-4:

Case	Desired participant numbers	Actual participant numbers
School A	12-16	14
School B	12-16	14
School C	12-16	12
School D	12-16	12
Totals	48-64	52

Table 4-4 Numbers of participants

Recruitment of the child participants was achieved through the main contact at the school (either the Head Teacher or Deputy Head Teacher). The researcher asked the school teachers to select a range of potential children for participation in the research, ensuring a mix of genders and range of abilities. This was necessary because multiple phases were being conducted and the research would require children to be out of lessons for some length of time, therefore, it was appropriate for the teachers to ensure minimal impact for children. Criteria for the selection of the children were given to the schools and it was requested that the children were asked if they would like to participate in the study, rather than teachers enforcing it upon children as a part of their learning. Criteria for the selection of children are outlined in Table 4-5:

Participant selection criteria
Children were to be in either Year 4 or Year 5 (aged 8-10 years old)
A mixture of both male and female participants
A range of academic abilities
Children who would not be adversely affected by spending time out of several lessons
Children who were actively willing to participate in the study
Children whose parents were happy for them to participate in the study

Table 4-5 Participant selection criteria

Permission to carry out the study was gained from the school and the children themselves whilst parents were given the option to 'opt-out' of the research. This is detailed in the 'Ethical Considerations' section, Section 5.6.

4.10 Summary

This chapter has discussed the nature of the qualitative paradigm and introduced the methodological framework for the study including the adoption of grounded theory principles and identifying suitable study sites at which to conduct participatory research methods. The pilot study design and implementation has been presented, and reflected upon, in detail and it became a key driver in the evolution of the research and for the methods adopted, whilst the refinement of the research questions has also been outlined. Finally, the phased research approach and recruitment of schools and participants has been presented. The chapter that follows describes the final research methods adopted, their implementation and methods of data analysis.

Chapter 5

Research methods and implementation

5 Research methods and implementation

The research methods were designed and amended following the pilot study. This chapter outlines the development of the research methods, the implementation of the fieldwork and describes the process undertaken for data analysis.

5.1 Development of the methods

As discussed in Section 4.8, the research was set up to be conducted in phases, adopting principles of a ground theory approach, and therefore, methods were adapted in later phases. Following the reflection and conclusions from the pilot study, in conjunction with considering the refined research questions, the final methods to be employed were determined. This was an ongoing process, the methods for Phases 1 and 2 were determined at the outset of data collection, with refinement between the phases, and whilst the researcher had made plans to continue onto a third phase, the final refinement of this phase would be dependent on the outcomes of the second phase. Methods that were used in the main study consisted of: non-participant observation, scrapbooks, child-led tours, focus groups, and semi-structured group interviews. However, these were not independent methods, rather, they were interrelated between phases. Their implementation in the sequential research phases are shown in Figure 5-1:

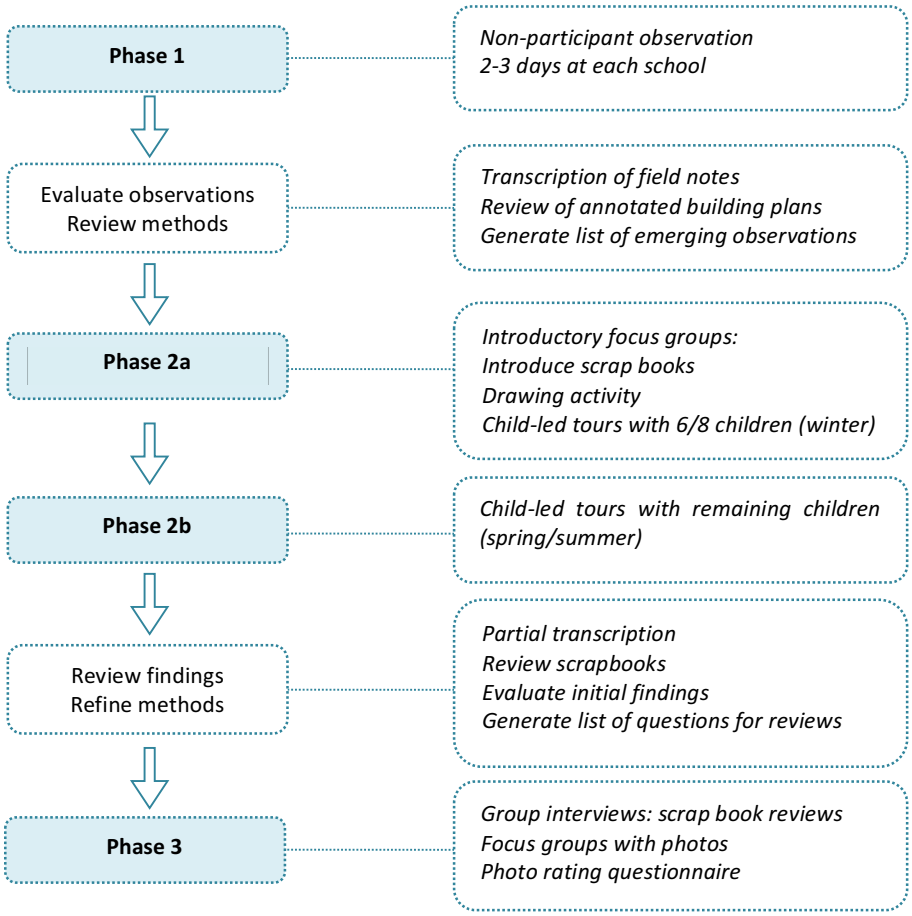

Figure 5-1 The research phases and methods adopted

The sections that follow provide a description of each of the research phases, including a description of the method with modifications following the pilot study, the rationale behind using certain methods and potential issues and limitations that the researcher was mindful of when carrying out the fieldwork.

5.2 Phase 1: Observation

5.2.1 Details of the method

The pilot study identified a need to conduct non-participant observation in each of the case study schools, prior to carrying out the participatory methods, as "direct observation offers a validity check for interpretations from other measures" (Oblinger, 2006 p.14). Reflecting on the methods of the pilot study, it was determined that

observing the context was important and necessary, in order to make sense of some of the later discussions with children as well as providing additional data about the phenomena (Yin, 2014) which may not be possible with the other methods. It involves the passive observation of human activities where the researcher does not engage verbally with the participants (Kumar, 2014 p.223-224). The researcher collects observation data in the form of field notes on the behaviour and activities in the environment, at the research site (Creswell, 2013 p.190). By spending some time observing the school environments it would enable the researcher to relate the information generated by other methods to the context, whilst it also enables an adult to become more familiar with the way in which young children use their surrounding environment (Clark, 2007, Clark, 2010). A vast amount can be learnt about children's everyday lives by observing them in their own environments (Tudge and Hogan, 2005 p.103).

Observation would also provide the researcher with an overview of the schools' layout and an insight into how spaces within the building and grounds tend to be used. Observational methods can be commonly used in a descriptive manner rather than in ways to evoke meanings (Tudge and Hogan, 2005 p.103). It was appropriate to adopt this as a method, as this process was more about understanding the context, offering contextual, secondary information that would be used to aid the data analysis of the subsequent methods. Observations were to be casual in nature and also extended into the wider fieldwork duration. This phase would provide a body of evidence of the users' interactions with their environments to be generated to supplement the data from other methods. Since the researcher would be spending significant time around the school, it was deemed necessary for the children to be made aware of the researcher's presence in school prior to conducting the observation. This would be beneficial for the later phases, as children could become more familiar with the researcher and therefore feel at ease during the participatory studies. One of the issues with observation as a method arises when individuals become aware of the researcher's presence (Kumar, 2014 p.224). However, this was not intended to be a full ethnographic study and it was felt that by making children aware beforehand, the researcher's presence would be seen as less of a novelty.

Due to logistical reasons, the time spent at each school was limited to 2 to 3 days in any one school. Anything interesting or unusual happening in the time period, would be recorded on sketch drawings and through field notes, both descriptive and reflective. In addition to this, general observation notes and photographs were also taken, on the context, the urban environment, the materiality, spatial arrangement, internal environment quality and the interaction of users.

5.2.2 Issues and limitations of the method

One of the difficulties when recording observation notes is the temptation to report 'everything' (Silverman, 2011 p.256). Non-participant observation also requires a clear focus to be effective and this was initially challenging in the pilot study. Rather than attempting to record everything, as Creswell (2012 p.134) recommends, an observation protocol was employed and the researcher developed a method whereby a sketch plan or diagram of the space being observed was used (refer to Appendix C for example observation field notes). However, it should be noted that outdoor playtimes proved difficult to observe due to the frantic nature of this short intense period of the school day and whilst localised areas of activity were documented, the broader overview was more general in nature. As previously discussed, this limitation is perhaps less of an issue, since this initial stage was used primarily to gain an understanding of the context and identify topics for further examination in the later phases.

5.3 Phase 2: Focus groups, child-led tours and scrapbooks

The methods adopted for Phase 2 of the research were concerned with initially enabling children to think about their surrounding environments, recording spaces and places within the environment that were important to the children. The intention being to begin analysing this initial data to realise emerging themes which could be explored further. This would aid progression onto a third phase where children would be invited to reveal deeper descriptions of their experiences. Following the successful use of focus groups in the pilot study, it was determined that using this method to begin the participatory studies would be most appropriate. However, the focus groups' protocol was developed and refined, following a review of the method. In addition, it was considered that the drawing prompts were useful to determine

specific spaces and places and they acted as a prompt for further discussion. However, during the pilot focus groups it became challenging to depict an individual child's reasoning and experiences in the limited time available. It was felt that a method which provided more specific prompts and questioning, in which the children could take more time providing their responses would be necessary. Therefore, the researcher developed a scrapbook method, addressing the specific themes that had emerged from both the pilot study and observation phases. Additionally, the child-led tours were considered invaluable to the study following their use in the pilot study, as the photo-elicitation had allowed the researcher to understand how and why certain spaces and elements of the environment were liked by the children whilst revealing additional descriptions about their experiences. By adopting several participatory methods, it was intended that this would provide a broad overview of the issues surrounding the research questions; enabling every child to have a voice, whilst also triangulating the data across the different sources. It was required to run two stages of data collection within this phase, due to the necessity of conducting the child-led tours in different seasons, hence Phase 2 is broken down into Phase 2a (focus groups, scrapbooks, child-led tours) and Phase 2b (child-led tours). When visiting each of the case study schools, a timetable for the week was produced whereby sessions were planned in line with the schools' timetable. This was to ensure that all children were introduced to the researcher in a focus group session, to build a rapport, prior to conducting the child-led tours. Each of the methods adopted for Phase 2 are now discussed in further detail.

5.3.1 Focus groups

The rationale behind adopting focus groups as a method is presented in Section 4.6.7 (pilot study methods). Furthermore, they were used as an initial method in Phase 2 for the following reasons: to introduce the children to the researcher, to explain the nature of the research itself by explaining the information sheet, to allow children to read and sign the consent form and to introduce children to the scrapbooks whilst beginning to stimulate thoughts about the built environment. As such, the focus groups became more like a workshop than a group interview. As Loxley et al. (2011 p.54) suggest, the first sessions are an initial 'way in' to their understanding of their school spaces. Focus groups were conducted with 4 to 5 children which would provide peer support when talking to a relative stranger (Simkins and Thwaites, 2008), thus at

each school there were 3 focus groups conducted. As Simkins and Thwaites (2008 p.539) note, focus groups can have pitfalls in terms of "peer influence", however, considering the different methods being carried out and the fact that this was to be an introductory session, it was thought that this could be distilled through the other sources of data. Focus groups were necessary with all participants at each school, as they would not only ensure that all children were introduced personally to the researcher, to build rapport, but also one group would not necessarily produce enough information. Due to the nature of the group activity, people (the children) may share the same responses in any one group (Bryman, 2016 p.505). Sessions were requested to be conducted in a quiet room at the schools, however, this was not always possible due to lack of free space, therefore, the focus groups were conducted in several different locations. During the latter half of the session the children were asked to create drawings (as in the pilot study) from several structured prompts, whereby the researcher aimed to explore specific themes in more depth, questioning the children directly as they were completing their drawings. As noted in Section 4.6.6, the drawing prompts (listed in Figure 5-2) were used in a similar way to the photos taken on the child-led tours; they were used to provoke children's discussions to reveal stories about their experiences in these places. Drawings are commonly used within participatory methodologies to provide insight into children's experiences (Veale, 2005 p.254), the insight comes to fruition by then asking the children to discuss their drawings. An outline of each focus group session is shown in Figure 5-2:

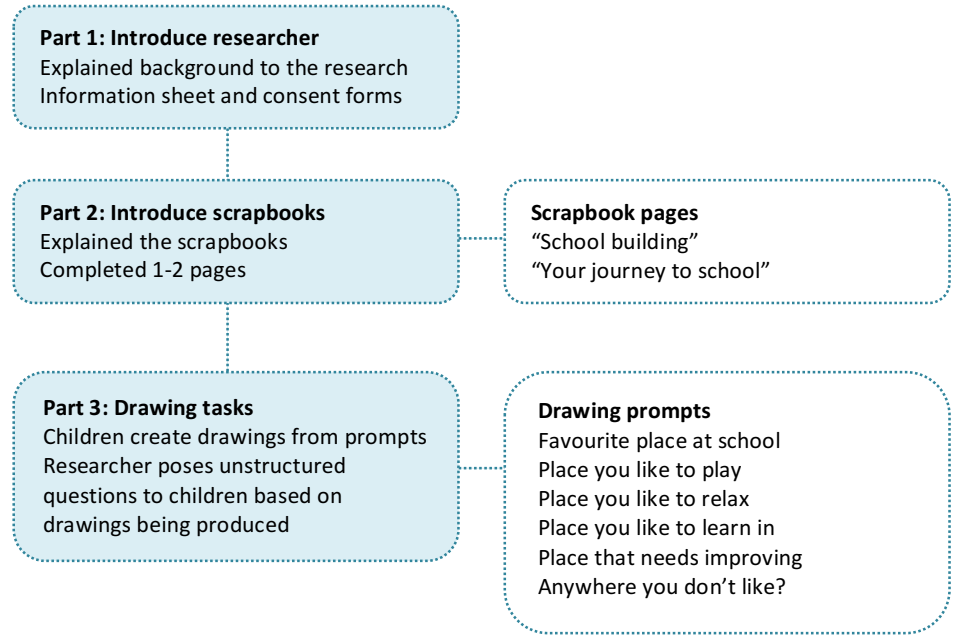

Figure 5-2 Details of the focus group sessions

The drawing tasks were considered the main data collection method during the focus groups. The focus group session was audio recorded from the start of part 2, the scrapbook introduction, and later transcribed for data analysis. As outlined above, the scrapbook introduction included the completion of a couple of example pages, one of which was concerned with the 'school building'. When the children were completing this section of their scrapbooks, there were some very fruitful discussions being had and as such, the researcher determined this stage of the focus group to be of equal importance to the drawing tasks within transcription and data analysis.

5.3.2 Scrapbooks

As has been noted earlier in this thesis, visual and participatory methods are widely used in research with children, and in particular research which aims to explore children's experiences and perspectives. The use of creative methods and drawings (Thompson, 1995, Veale, 2005, Leitch and Leitch, 2007, Simkins and Thwaites, 2008, Leitch, 2008, Zur and Eisikovits, 2010, Dutt, 2012) and more specifically, the use of scrapbooks (Bragg and Buckingham, 2008), emerged in response to the study's broad aim; to explore how primary school environments impact on children, from their perspective. Creative visual methods, such as drawings and scrapbooks, are known to be successful when conducting research with children, in that they can reveal rich and collective narratives about their lived experiences (Leitch, 2008 p.37). Considering the experiential nature of the topic, by using a 'scrapbook' where children could draw and write their thoughts, feelings and ideas, it would enable a wide range of topics to be considered, to determine the children's perspective. Having successfully used creative methods in the pilot study and on reviewing further the literature on conducting research with children, the scrapbooks were developed as a way of extending the drawing tasks beyond the context of a focus group itself. This would work toward mitigating some of the issues of focus groups discussed earlier, in particular peer influences and the potential for the group discussions to stray off-topic or suffer from the dominance of interpersonal dynamics (Bragg and Buckingham, 2008 p.115). The scrapbooks would be a personal record of the children's thoughts on their school environments, which enabled a more individual form of communication than the focus groups, reducing any potential influence of their knowledge about the researcher's background (Bragg and Buckingham, 2008 p.116). The scrapbooks could be considered

an inclusive method (Johnson, 2008 p.91), also allowing for different learning styles, with children being able to participate using words, drawings and photos. The scrapbooks aimed to pose questions and drawing prompts on various topics related to the research questions, moreover, these topic areas had emerged from the pilot study focus group sessions:

- Your school building
  - questions related to the school building
  - used to understand children's thoughts about the building
- Locating the classroom
  - a simplified architectural plan of the school was provided, the aim being to find out if the children could read a spatial drawing of their school
- Your journey to school
  - this topic was included as the intention was for it to stimulate children's thoughts about their wider environments
- Good places at school
  - used to identify the most important things/spaces/places at school where children might feel happy and understand why
  - used as a tool to explore children's experiences in these places
- Places to learn at school
  - used to identify positives and negatives of the classroom and to understand how characteristics might impact on the children
  - used to identify any other good places to learn and why the children felt they were good spaces
- Playtimes and lunchtimes
  - used to identify places that the children use at playtime and to identify their preferred outdoor spaces
  - used as a prompt to elaborate on their experiences in such spaces
- Where do you play?
  - a simplified architectural site plan of the school was provided, the aim being to find out if the children could read a spatial drawing of their school grounds
- Improvements?
  - used to identify any areas that the children considered might need improving and why they felt improvements might be necessary

As mentioned, the scrapbooks were introduced to the children in the initial focus group workshop sessions, the aim being to ensure the children were familiar with the format and the ways in which they could complete the scrapbooks (refer to Appendix D for an example). The children were then advised that they could take the scrapbooks away with them to complete in their own time, be this in free time at school or at home, depending on the school's preference. It was a concern of the researcher that the scrapbooks may not be completed or even lost, however, this was discussed with the children's class teachers and they were asked to ensure the children remembered to complete the scrapbooks in their own time. The scrapbooks were originally intended to be used as a method to provide a broad overview of the research topic, whilst being used to assist with the triangulation of data from other methods. However, the return and completion of the scrapbooks exceeded expectations and as such, the scrapbooks became a key part of the methods going forward into the final phase of data collection.

5.3.3 Child-led tours

The rationale behind adopting child-led tours has been discussed in Section 4.6.6. This was the most successful method trialled during the pilot study and as such, this method followed through to the main data collection phases. Rather than producing drawings in a focus group, which was detached from the spatial context and encouraged by researcher-led drawing prompts, the children could take photos of things that they wanted to discuss. Children were made aware that they would be asked to discuss some of their photos on an iPad following the tours. As such, the children became co-researchers during this method, as they collected the visual material and were involved in a discussion about the data which assisted with analysis process (Fielding, 2001). The child-led tours acted as an extension of the focus groups whereby the researcher gained more of an insight into children's spaces and places within the school grounds and revealed what elements of the environment that might impact on their daily lives.

A timetable for the time spent in each of the schools was developed which worked with the individual school days, ensuring all of the focus groups were conducted prior to the child-led tours. The child-led tours were undertaken in the same way as the pilot

study; tours were conducted with children in pairs, they were given a digital camera each to take photos of important places at school whilst taking the researcher on a tour of the school, culminating with a verbal review of 10 of their photos on the iPad. The tours themselves were video recorded for reference during data analysis and the photo-elicitation stage was also video recorded for transcription. The implementation of this method was revised slightly following a review of the pilot study in that the prompt given by the researcher was re-worded and the photo discussions were condensed. In terms of the prompt given at the start of the tours it was altered from *"take photos of places at school that you like or dislike"* to the following: *"take photos of places and spaces that are important to you in school".* The reason for this change was predominantly because places the children liked and disliked were being considered in the drawing tasks in the focus groups and were considered too vague for the child-led tours, resulting in large numbers of photographs. By asking for photos of places and spaces that are important at school, it was felt this was more specific whilst it addressed one of the research questions directly, in the hope that it would also reveal more about their experiences in the discussions that followed. Another revision to the method was that the children were asked to choose 10 of the most important photos to discuss with the researcher after the tours. This was mainly due to logistical constraints, to ensure children were only out of their lessons for the time that had been specified. In addition, it was felt that more specificity was required during the photo-elicitation to encourage the children to consider what was particularly important to them in their school. However, the essence of the photo-elicitation remained; a desire to produce story-telling responses rather than an interview-style approach with question and answers (Clark-Ibáñez, 2008 p.103). The photos chosen to be discussed by the children were noted at this time, for later reference in data analysis. The photo-elicitation stage became extremely important for the data analysis process, as Kaplan (2008 p.189) argues, the researcher must be careful when deciphering photographic data, as interpretations that are too literal can close down other dialogues that they may create. When reflecting on the pilot study, it was deemed important to ensure that the remaining photos which were not necessarily discussed, did not become redundant data. Therefore, the use of the children's photos for further elicitation and discussion became a key part of the Phase 3 methods.

5.3.4 Issues encountered during Phase 2

There were some issues encountered during Phase 2 which impacted the subsequent phase and which are important to address in future research. Focus groups could have been divided into two separate sessions: a meeting for initial familiarisation with the researcher, followed by the drawing tasks as a separate focus group activity. This would have provided more time for the drawing tasks and allowed time for more in-depth questioning in terms of the meanings behind the children's drawings. Creative activities in research are sometimes difficult to manage and some children saw this as just something to do to get the out of their normal lessons. For example, the researcher had to control the group in terms of noise levels throughout the sessions, allowing only certain children to speak as at times as the children were very excitable due to it being the first meeting. This obviously loses some of the potential analytic use of a focus group, to provide a deeper understanding of a topic due to the interaction between the group members (Silverman, 2016). There were also issues noted regarding power relations, where children at times seemed to be thinking about what the researcher wanted them to say. Power relational issues within the focus groups were mitigated by referring children back to the scrapbooks as a place to note their thoughts, and by the researcher's deeper probing in terms of the children's drawn responses. Issues of power relations are discussed further in Section 10.4.6.

When considering carrying out the child-led tours, the main issue faced with this method was regarding the need to collect photographic and video based data when working with children. However, ethical approval was obtained for the study and this is discussed in Section 5.6.

In terms of the data collection practices themselves, a major factor for consideration when planning the phased research design was the weather and seasonal changes. As previously noted, it was determined that the child-led tours would be run at two different times of the year: winter and spring/summer. However, even with every effort to plan this, the weather in the United Kingdom is very changeable, even during a single day and as such, it was imperative to record and consider this in the data analysis process. For example, there was rainfall at times during some of the tours and this may have impacted on children's choices of photos due to photos appearing dull and grey, rather than bright and light on sunnier days.

The main issue regarding the use of the scrapbooks method, occurred on the collection of the scrapbooks at the end of Phase 2. Some of the scrapbooks had not been completed fully or in some cases scrapbooks were not completed at all. This impacted considerably on Phase 3 and determined the participants whom it would be possible to interview. Although not many, inevitably, some of the scrap books had been lost by children who took them home. It was necessary to make the decision as to whether to abandon the partially completed scrapbooks or to develop a method whereby the children could be provided with an environment in which to complete the scrapbooks if they wished. This became a key driver for the refinement of the research methods in Phase 3. Additionally, it was necessary to consider data storage in more detail, going forward, due to the quantity and size of photographic data and large video files.

5.4 Phase 3: Scrapbook reviews, focus groups and the photo rating survey

The methods designed for Phase 3 of the data collection were borne out of the emergent findings and implementation of the methods both during the pilot study and during Phase 2. It was essential to read the scrapbooks and begin the analysis process prior to conducting Phase 3, to ensure that all participants' voices could be heard. Although there were several scrapbooks returned that were incomplete, for the majority of cases there was enough information provided to warrant an interview with the children. Therefore, group interviews addressing the scrapbooks became crucial to methods adopted in Phase 3. In addition, the photos children had produced on the child-led tours, and in particular, those photos which had not been elaborated on in the reviews, were incorporated into a round of focus groups, where they were used for discussion and elicitation. When working with visual data, it can be challenging to build an understanding of the reasons behind the photos and whether views are shared within a group. Due to the fact there were many instances in which multiple images of the same important spaces or objects were captured during the tours, there was a need to triangulate these findings, which entailed the use of more than one method (Bryman, 2016 p.386). It was therefore necessary to devise an additional method which could allow for triangulation of the photographic data, thus, a photo rating survey was developed. The implementation of methods in Phase 3; scrapbook

interviews, focus groups (with photos) and the photo rating survey, are discussed in more detail in the sections that follow.

5.4.1 Scrapbook interviews

The scrapbooks were used to obtain children's perspectives in ways that other methods may not (Bragg and Buckingham, 2008 p.130), providing insights into how children perceive their school environment, the aim being to understand how it might impact on their lives at school. It was necessary to conduct a thorough review of each individual scrapbook prior to commencing this stage, not only to develop interview guides but to select the number of children to be interviewed, a summary is shown in Table 5-1:

Case	Scrapbook interviews	Incomplete scrapbooks
School A	10	4
School B	14	0
School C	4	8
School D	9 (1 absent)	2
Totals	37	14

Table 5-1 Scrapbook interview numbers per school

Similarly to photo-elicitation, the scrapbook interviews would involve using the visual responses (both drawn and written) to invoke commentaries, memories and discussions in the form of a semi-structured interview (Banks, 2001 p.87). As with photos, details depicted in the scrapbooks could become the basis for discussion of "broader abstractions and generalities [and] conversely, vague memories can be given sharpness and focus, unleashing a flood of detail" (Banks, 2001 p.88). Referring to the pilot study methods, it was determined that these semi-structured interviews would need to be conducted with the children in pairs, as this would provide peer support (Simkins and Thwaites, 2008 p.538), although caution would be required over the possibility of peer influence. It is usual in a semi-structured interview for the researcher to have a list of broad question prompts or topics to be covered, referred to as an interview guide (Bryman, 2016 p.468). Interview guides were created based

on the children's scrapbook responses, yet the interviews remained flexible in nature. There were some generic interview prompts common to all interviews; for example, *"can you explain the drawing for me?"*, whilst there were additional, more specific prompts based on certain scrapbook answers and required elaboration. Questions were also asked ad-hoc as the researcher picked up on some of the children's replies (Bryman, 2016 p.468). As the interviews were conducted in pairs, there were also times when the flexibility of the semi-structured method allowed for children to interact and discuss their narratives, which became more akin to the nature of a focus group.

There were 14 children across the four case study schools where the scrapbooks were considered insufficient to warrant an interview. The researcher questioned whether to disregard this information or whether to provide a session whereby the children could complete their scrapbooks. It was at School C this became of most interest as there were 8 out of 12 children who had incomplete scrapbooks. It was determined that running a focus group would be the best way to enable the completion of the scrapbooks, although caution would be required when analysing this data, as the children were now in the presence of the researcher (limitations are discussed in Section 5.5). Children were free to fill out their scrapbooks as desired with the researcher merely facilitating the session, rather than posing any questions. Nevertheless, towards the end of these sessions, it became necessary to ask the children to briefly explain some of their drawings to assist with the analysis. All interviews and focus groups were audio recorded and fully transcribed during the data analysis process, as discussed in Section 5.7.

5.4.2 Focus Groups (with photos)

As has been noted, the focus group method facilitates group discussions centred around a defined topic, the technique offers the researcher the opportunity to understand 'why' people might feel the way they do about a subject and providing joint construction of meaning (Bryman, 2016 p.502). For Phase 3 of the study, this involved the use of the children's own photographs, taken during the child-led tours. The focus groups were initiated to provide the children with a forum to review the photos once again, select those that were important, and elaborate on why such

photos might have importance for them. By conducting this activity in a group session, it would also allow for interaction, debate and discussion between the children when selecting the photos that were important to them at school. Not only would these focus groups allow for triangulation when comparing photos that had been selected within the child-led tour data, but also the additional elicitation of some of the images may provide new perspectives and observations within the data.

Focus groups involved 4 or 5 children at a time, and where possible, in the same groups as in Phase 2. This was to ensure that children were familiar with the group, in the hope that they would feel at ease expressing opinions amongst friends. Children were given packs of their personal photos taken during the tours and asked to choose their favourite photos of the *"places"* and *"things"* that are most important to them at school. The children were asked to stick these photos into their scrapbooks and then write a sentence to describe why they liked each photo and what was important about that photo. There was no limit on the number of photos they could choose, however, the children spent a considerable amount of time reviewing their photos to put in their scrapbooks and they seemed to be making thoughtful, considered choices about their selections. The children were free to interact and discuss their photo choices in the group and for clarity of the written data, the researcher asked each child to read out their sentence and explain the photos they had chosen. The focus groups were audio recorded with a digital audio recorder in the centre of the table and fully transcribed for data analysis (Section 5.7).

5.4.3 Photo rating survey

It was a concern that with such a large amount of photographic data, and children selecting their preferences from their own photos, that analysis of this data would be challenging as it would be difficult to ascertain whether there were common feelings between children at any school, and more broadly, if there were any commonalities or differences across the case studies. Therefore, the researcher developed an additional research tool, which was to be used for triangulation purposes to offer greater validity (Bryman, 2016 pp.383-386) for data already collected. As noted by Bryman (2016), a triangulation method can be planned or unplanned, in this case, the decision to develop this method was only taken once the Phase 2 data had been collected. A photo-rating survey was developed, all photos that had been taken by the

children during the child-led tours were reviewed to create the survey tool. There was a large quantity of photos taken when pooling all children's photos together and it became necessary to rationalise the list of photos to be used in the survey, for easier completion by the children. As the number of photos were to be significantly reduced, there were three stages with different criteria used to shortlist the photos as indicated in Table 5-2:

Photo shortlisting method
Stage 1 • Photos that were predominantly of children's faces looking at the camera were omitted from the selection for ethical reasons • Photos of spaces where children's faces appear in the distance were blurred out Stage 2 • Photos of spaces or objects that were the same were omitted from the selection (where specific elements in the photograph and the angle at which the photo was taken were the same) • Photos that were too blurred to read were omitted to ensure legibility of all photos by children in the survey Stage 3 • Photos which had been taken for personal reasons, as had been described by the children in the elicitation stage, eg. a sibling's classroom name or relative's work on display, were omitted • Photos that had been taken containing potentially confidential information, eg. staffroom whiteboards, were omitted

Table 5-2 Photo shortlisting method for photo rating survey

The final selection of photos for each survey was limited to 90 photos and they were classified into two sections: '*spaces'* and *'items'*, inserted into a document in a random order (refer to Appendix E for examples). It was carefully considered which category to place a photo under, taking reference from the child-led tour discussions and conversations and where the researcher was unsure, the photo was placed in the 'items' category. Each photo in the survey document was given two Likert scales for the children to rate each photo and determine their attitudes towards the photos (Bryman, 2016 p.154); as indicated in Figure 5-3:

Figure 5-3 Example Likert scales from photo rating survey

The two five point Likert scales presented consisted of: *"like a lot to dislike"* and *"very important to not important".* The intention was that photos which were liked and considered important would be identified, whilst allowing any disliked places or photos that were not important to also be acknowledged. The photo rating survey was given to all child participants at each school, at the beginning of the focus groups. Children were asked to complete this survey in silence (in the presence of the researcher) to ensure the children's thoughts were their own and there was no conferring or discussion during this time. Once completed, the surveys were handed back to the researcher. By using this mixed-method approach, considering the qualitative data from the child-led tours (Phase 2), the focus groups with photos (Phase 3) and the photo-rating survey (Phase 3), it would be possible to draw conclusions about specific elements that are important for children at the schools.

5.4.4 Issues encountered during Phase 3

The main issue during Phase 3 is concerned with the methods used to interview the children about their scrapbooks. As discussed, children were given the opportunity to complete their scrap books in focus groups in Phase 3. However, they were not

interviewed in the same group interview scenario, and rather the completion of these scrapbooks became more of a group discussion and as such, this was considered in analysis as their responses may have been influenced by their peers in these sessions. Additionally, when the visual data was described in an interview situation, it would take much longer to elicit, which affected the group interviews. A large amount of time was focused on describing the drawings leaving less time to explore children's other answers in more depth, during the time available.

The survey tool had to be implemented within existing timetabled focus groups. There were timing issues whereby some children took a very considered, time-consuming approach to completing the survey, whilst other children were keen to complete it as quickly as possible to move onto the next task, leading to distractions within the group. Coupled with the issues outlined in Section 5.3.4, regarding the implementation of Phase 2, some of these issues cause potential limitations within the data collected.

5.5 Potential limitations of the data

The limitations of the methods and within the data collected are important to note and should be borne in mind during data analysis and presentation of findings. There are potential limitations of the child-led tour method, in terms of the ability to analyse and understand the wealth of photos taken, due to only 10 being discussed in the photo review; this leaves some unexplained data where additional findings may be apparent. There were many photos taken of things that perhaps seemed like irrelevant objects, thus, interpretation of every single photo taken is required to understand the true purpose and meaning behind each photograph. The researcher attempted to rectify this issue by utilising the photographic data in Phase 3 of the study. Another limitation with the child-led tours was the fact that the extent of the tours was limited at times, due to school rules, ethos or health and safety reasons. At two of the schools, children felt they could not enter classrooms and other spaces whilst lessons were taking place and at School C, there were areas designated off-limits due to construction work taking place at the school. As a result, there were inevitably areas of the school that may not appear in the children's photographs whether they would have liked to record them or not. As such, it would be necessary to cross-analyse this data in conjunction with the other methods adopted.

As previously noted, participant numbers for some of the tasks in Phase 3 varied between schools. This was due to the extent to which the scrap books had been completed. By initially tabulating some of the scrap book data, it was noticeable that this lack of data was significant and as such, children were given the opportunity to complete their scrapbooks in Phase 3. However, children who were given additional time to complete their scrapbooks were now completing these in the presence of the researcher, whereas the other participants had completed these in their own time and away from the researcher, perhaps even the context. The researcher was conscious of this and refrained from posing questions until later in the focus group. The researcher was aware that by conducting a focus group where children could fill out their scrapbooks together, in the presence of the researcher, may lead to issues in terms of peer influence and power relations as previously noted. As such, the researcher asked the children to explain some of their responses in more detail during the session, however, it was not possible to asked detailed questions within the time. Ultimately, this could potentially lead to differences in the depth of responses between schools.[1]

Moreover, potential external influences on the scrapbook responses were of concern. However, any possible influences from teaching staff at the school or even parents, were to be scrutinised by interviewing the children with completed scrapbooks. Additionally, in the interviews, children were asked where or when they had completed their scrapbooks and an attempt was made to ascertain whether anyone had helped them complete it.

Whilst completing the photo rating survey, children were asked to do so in silence. However, since the children were excitable about seeing their photos they had taken again, some children tended to talk either to themselves or to each other which could have potentially influenced others' choices being made in rating the photographs. Nevertheless, the researcher attempted to control these situations and generally the children were very quiet whilst completing this task with children only talking ad-hoc, therefore, the impact was considered to be minor.

[1] Interestingly, the focus groups used for children to complete scrapbooks became more fruitful than the group interviews because at times, the group of children began to discuss the answers given by each other which led onto other topics of interest. These focus groups were fully transcribed for data analysis.

5.6 Ethical Considerations

The most significant potential issues that surround conducting research with children are the ethical issues. Ethical considerations are important, as Sieber (1993 p.14) has suggested, they relate to *"*the application of a system of moral principles to prevent harming or wronging others, to promote the good, to be respectful, and to be fair*"* (cited in Morrow and Richards, 1996). There are four main areas to consider when discussing ethics within social research: harm to participants, lack of informed consent, invasion of privacy and deception (Diener and Crandall, 1978, cited in Bryman, 2016 p.125).

Prior to conducting data collection, ethical approval was obtained from The University Nottingham; that is, for both the pilot study and the main study. For this, there was a specific protocol followed, providing details of the intended study, detailed descriptions of how the aforementioned topics are ethically approached, and all consent forms and data collection tools were also submitted as part of the ethical review process, (refer to Appendix F).

5.6.1 Participant consent

Informed consent was gained from various gatekeepers, including the Head-Teacher, class teacher and the children themselves for the participatory study, with opt-out consent forms provided for parents. Methods of consent were developed in discussion with the main gatekeeper, the schools. The researcher felt it was necessary to provide children with their own (child-friendly) information sheet and consent form, so that the children themselves were made aware of the research and they were able to give their own consent. Direct correspondence was made with the school through phone call/email and letters, followed up by meetings with each of the Head Teachers, where verbal permission for the study was gained initially. There was then a comprehensive information sheet provided for the school (which noted the intention to use any photos collected in the thesis and publications) and a consent form completed by the Head Teacher which confirmed the school's participation in the research (see Appendix F). There were also letters for parents of children taking part in the study which enclosed an information sheet on the study including the different elements of research being carried out, whilst asking whether they would be happy for their child

to participate in activities. As part of this, enclosed with the letter was an 'opt out' consent form for the activities that would be taking place; child-led tours, focus groups and scrap books. Schools were asked to notify all parents of the researcher's presence in school (via information sheets) and the type of research being carried out, to enable any parents who wished for their children not to appear in photographs or to not participate in the study to come forward.

5.6.2 Use of photography

In addition to obtaining consent for children to participate in a photography based research method, consideration was also made regarding the fact that it may be the case that a child takes a photograph of another child (who may not be directly taking part in the activity) and thus will feature in the visual data. The information sheet informed parents of this activity and make them aware that photographs, although being taken by children, may be used in the research. If a parent wished to opt out of this, they were asked to sign and return the 'opt –out' consent form to the school and the child was then made known to the researcher before the study commenced. Any photo that may have contained this child would be disposed of and not used in the research.

5.6.3 Prevention of harm to participants

The research methods were carefully considered to avoid any harm to participants, no participants were to be exposed to physical or psychological discomfort. The nature of the research topic relating to the school building and the environment meant that sensitive topics within discussions were unlikely to be raised by children. However, it was imperative that the researcher was aware of the schools' safeguarding procedures and these were briefed by Head Teachers prior to carrying out any fieldwork. It was made clear to children through the information sheets and by the researcher, that the child was free to leave the session, if at any point they wished to. This process was ongoing, at the beginning of each session children were reminded that they were free to withdraw if they wanted to at any point. Likewise, if children had not completed their scrapbooks, they were given the option to complete them in an additional session, only if they wanted to. Children opted to participate in all of the activities when offered the opportunity. There were some instances where children asked to

return to their class during a session and in these instances the interview was ended at this point. In addition, it was also made clear that it was necessary to safeguard the researcher herself, this meant ensuring that there were always two children with the researcher at any one time and there were no instances where the researcher should find herself alone with a child. Due to the size of the focus groups and child-led tour groups this was not a significant issue.

5.6.4 Confidentiality

Confidentiality and anonymity are of utmost importance and no data collected from participants was to be related to descriptions of children and adults that could let the persons in question become identifiable. All participants and people named within the participatory sessions were transcribed into anonymous entities with pseudonyms. There were also no notes taken during the observations that would relate to names or personal descriptions of children and adults that could let persons become identifiable. Participants were made aware that the recorded information would not be accessed or used by anyone else apart from the researcher in their own work. In this instance, if any people were to appear in any photos taken by the children, their faces and identifying features would be obscured as well as the complete removal of non-consented people. As noted previously, the schools and participants were all made aware that any photos collected during the research may be used in the thesis and publications in future, and all parties had agreed to this during the consent process. All photos, recordings and notes taken were kept in a secure location or stored digitally on a password protected computer in line with University of Nottingham Code of Research Conduct and Research Ethics.

5.7 Data analysis process

The phased study produced a wealth of visual and descriptive information, including a significant amount of unstructured qualitative data. As Bryman (2016 p.569) notes, there are no specific rules to conducting qualitative data analysis, however there are a variety of approaches which can be adopted. The analytic process began with the review of the raw data and transcription of this data, coding strategies were then employed using a grounded theory strategy, using both traditional (by hand) and

computerised data analysis techniques (see Section 5.7.3). The researcher was immersed in the iterative process of data reduction, data display and verification (Miles and Huberman, 1994 p.10-11). Gathering rich data, that is detailed and full, means to obtain 'thick' descriptions (Geertz, 1973 cited in Charmaz, 2014 p.23) through extensive field notes and compiling detailed narratives through transcription of the audio data. It was important throughout the data analysis process to retain the richness of the participant information so that a true and full reflection of the children's experiences could be obtained. This required careful management of the qualitative data and significant time was spent meticulously transcribing the data. This section describes the transcription process, analytic techniques and coding strategies adopted for the complete set of data.

5.7.1 Data management and transcription

The data collected across all three phases, at the four case study schools, consisted of various media: field notes, children's drawings, 52 scrapbooks[1] (including drawings, photos and written responses), 52 sets of photos (taken by the children), video data, audio data and photo rating survey data. Considering the wealth of data generated, it was essential that this data was managed and stored (securely) in an organised and easily accessible manner. Field notes collected during the observation stage were transferred to electronic textual data. Audio and video data collected during the later phases were transcribed into an electronic format (Microsoft Word) for use in data analysis software (NVivo). All transcriptions used code names for the school sites and pseudonym names for individual children. Visual data produced through photographs, drawings and scrapbooks were also transferred to electronic format for analysis. Table 5-3 summarises the data types and the methods of recording this data.

[1] There were 50 scrapbooks returned at the end of Phase 2. The two scrapbooks that were lost by children were unrecovered. The two children who lost their scrapbooks were invited to complete one in another focus group session during Phase 3.

Phase	Method	Type of data	Raw data	Data management process
Phase 1	Observation	Text-based Visual	Field notes and photographs	Field notes transcribed verbatim Photographs stored electronically
Phase 2	Focus Groups	Audio Visual	Audio recordings of focus groups Drawings	Audio recording partially transcribed Drawings photographed and stored electronically
	Child-led tours	Video Visual	Video recordings of tours Video recordings of photo reviews Photographs	Video of tour partially transcribed Video recording of photo review transcribed verbatim with photos Matrix of photos and comments
	Scrapbooks	Text-based Visual	Completed scrapbooks with written responses and drawings	Scrapbooks scanned, stored electronically Tabulation of scrapbook responses
Phase 3	Scrapbook interviews	Audio	Audio recordings of interviews	Audio recording transcribed verbatim
	Focus groups with scrapbooks	Audio Visual Text-based	Audio recordings of focus groups Scrapbooks with photos and descriptions	Audio recording transcribed verbatim Scrapbooks re-scanned, stored electronically Tabulation of scrapbook photos and descriptions
	Photo-rating survey	Survey responses	Photograph sets with preference and importance ratings	Tabulation of survey results with photos

Table 5-3 Summary of data collected from each phase

Transcription of qualitative data requires forethought, careful consideration and attention to detail (Barbour, 2008 p.192) and as such, the researcher conducted all transcription of the data, taking time to record thoughts and interpretations. The transcription process is a crucial stage of data analysis whereby the researcher becomes increasingly familiar with the data (Riessman, 1993), reading and re-reading,

noting down initial ideas and searching for patterns (Braun and Clarke, 2006 p.86). It was important for the researcher to begin the transcription of data during the fieldwork phases, to initiate the analytic process early on and to allow for any alterations to the methods to be made. Caution is required, however, when audio or video data is transcribed as the reliability of the interpretations can be weakened if data that is thought to be less relevant is not fully transcribed (Silverman, 2011 p.20). To mitigate this, full transcriptions were prepared for the majority of recordings. During the fieldwork phases, the researcher kept a journal making notes on thoughts and observations where necessary and this process was continued during data analysis in the form of memo writing; which aids the generation of categories and concepts (Bryman, 2016 p.577). This was useful for both practical reasons during transcription and the recorded contextual information was used in data analysis. These notes and insights identified initial thoughts, interpretations and speculations and become the initial stages of the data analysis process where "embryo theorizing" assists in piecing together the holistic story of the project (Barbour, 2008 p.192).

5.7.2 Limitations during transcription

Even though the audio data was fully transcribed and efforts were made to minimise inaccuracy, it is worth noting a few issues that were encountered. The main issue that became apparent was identifying which child was talking at any one time from the audio recording. In addition, at times, the recordings were inaudible. This was due to background noise with children intervening and talking loudly over one another or children moving around the room out of recording range. As such, this required listening to the recordings repeatedly to recount the stories and experiences more accurately with reference to the field notes which had recorded locations of each child around a table. By listening to the recordings multiple times, this issue became a positive part of the analytic process. It enabled the researcher to become much more familiar with the data, paying close attention to minute details within the recordings, acting as a verification method to confirm accuracy and subsequently, proved beneficial to the data analysis process by aiding the generation of an initial list of ideas about the data (Braun and Clarke, 2006 p.88).

The decision was made to only partially transcribe some of the child-led tour data. For the videos of the tours, descriptive notes were transcribed with partial transcriptions of some of the conversations. However, this data was reviewed again after full transcription of the photo reviews had taken place. It became apparent that most of the conversations being had during the tours were repeated during the photo reviews; inevitably, the places children wished to discuss during the tours also became the topics for discussion when choosing the most important photos, therefore, it was felt that the fully transcribed photo reviews provided a rich set of data for analysis.

5.7.3 Computer aided analysis

The decision to use computer aided qualitative data analysis software (CAQDAS) was made early in the research study design, to allow enough time to become familiar with the functions of the chosen software package. Nevertheless, the use of computer software to assist with data analysis can be limiting, with concerns including: temptation to attempt quantification of findings, a loss of flow in narrative text, fragmentation of the material and de-contextualisation of the data (Bryman, 2016 p.603). However, benefits include the efficient management of large quantities of data and the nature of using CAQDAS allowing for greater rigour and transparency of the process (Flick, 2014 p.463, Corbin and Strauss, 2015 p.204) and the ability to examine interrelated ideas and relationships between data (Bryman, 2016 p.603, Corbin and Strauss, 2015 p.204). Therefore, it was determined that the use of *NVivo* software would be essential for effective data analysis. CAQDAS software also provides the researcher with a method of quick retrieval of codes linked to passages of text and the ability to retrace analytic steps (Corbin and Strauss, 2015 p.204), which would aid the continuous review of concepts during the iterative coding process. The software also provided a place to continue memo writing and allowed for the linking of memos to specific codes and sections of transcripts. When managing, and analysing such a large set of data, the functionality offered by this computer software was imperative to enable the researcher to consolidate all the research documents in one place (Weitzman, 2000). It is also worth noting that although CAQDAS software was used for a significant proportion of the data analysis process, the researcher used this in conjunction with methods by hand, to ensure cross-examination of research phases and also between data types.

5.7.4 The analytic process

The ethos of this study had been akin to that of a grounded theory approach and these principles were adopted when developing a coding strategy for the analysis of the data. Conducting data analysis, within a grounded theory framework, uses coding processes to identify categories or themes within the data. As noted in Chapter 4, Glaser and Strauss proposed grounded theory as a method concerned with analysis of data whereby systematic analysis can generate theory (Charmaz, 2014 p.7). The defining principles of the grounded theory method are outlined in Table 5-4 (Glaser and Strauss, 1967, Charmaz, 2014):

Principles of grounded theory approach to analysis
• Simultaneous data collection and analysis • Constructing analytic codes and categories from the data without initial hypotheses • Adopting constant comparison method throughout data analysis • Advancing theory development at each stage of analysis • Memo-writing to note categories, concepts, properties, define relationships and identify gaps • Theoretical sampling

Table 5-4 Grounded theory approaches to data analysis (Adapted from Charmaz, 2014 p.7)

Key principles of this approach were adopted for data analysis, including constructing analytic codes and categories within the data, using the constant comparison method (Birks and Mills, 2011 p.94, Corbin and Strauss, 2015 p.87, Bryman, 2016 p.573) and memo-writing to study relationships within the data. Engaging in early analysis of the data was also essential so that the data collection could be reshaped to pursue initial ideas about the data (Charmaz, 2014 p.114).

The specific method employed when studying the physical data was a thematic based approach. Thematic analysis is a general qualitative technique used in various approaches to data analysis (Bryman, 2016 p.584), whereby the data undergoes a series of iterative coding phases to derive specific themes within the data. A summary of the stages of thematic analysis compared with the grounded theory approach are shown in Table 5-5:

Thematic analysis processes (Braun and Clarke, 2006)	Grounded Theory (Charmaz, 2014)
1. **Familiarise yourself with the data** (noting initial comments) 2. **Generate initial codes** (systematic coding of the dataset) 3. **Search for themes** (collating similar codes into potential themes) 4. **Review themes** (check if the themes work with rest of data) 5. **Refine themes** (refine specifics and note linkages and associations between themes)	1. **Initial coding and memo-writing** (line by line coding) 2. **Focused coding and memo-writing** (select and code key issues) 3. **Collect new data via theoretical sampling** (strategically sample and collect data to develop categories) 4. **Continue to code, memo, use theoretical sampling** (refine categories until no new issues emerge) 5. **Sort and integrate: axial coding** (refining links between categories, develop concepts and theory)

Table 5-5 Thematic analysis and Grounded Theory approaches
(Table adapted from Silverman, 2016 p.333)

As shown in the table, the analytic processes are closely linked, although with some differences, notably, the use of theoretical sampling and iterative data collection within grounded theory. Analysis of data began during data collection; however, it is important to note that 'theoretical sampling' in terms of data collection, did not form part of this study. Therefore, a hybrid method of analysis was adopted, with reference to Table 5-5, with coding principles of grounded theory being used initially (stages 1-2), followed by the development of themes within the data (stages 3-5) and finally, a form of axial coding (Strauss, 1987 p.32) being performed to enhance the analytic power of the themes (Charmaz, 2014 p.150) (grounded theory stage 5). Thematic analysis allows researchers to follow an inductive approach, rather than counting words and phrases; the focus is on describing implicit and explicit themes within the data (Guest et al., 2012 p.10), without necessarily culminating in a fully developed grounded theory. The analysis was an iterative process, as themes emerged they were then reviewed and refined using the constant comparative method (Birks and Mills, 2011), and conceptual mapping diagrams.

5.7.5 The coding process

Initially a review of the data was undertaken by re-reading and making notes (by hand) on the visual and textual information. This constituted the familiarisation process with the data by looking for key words, potential trends and themes, prior to any analysis (Braun and Clarke, 2006 p.87). Transcripts were then labelled and categorised where segments were given a label or 'code' to summarise sections of the data, facilitating analytic descriptions (Charmaz, 2014 p.4). This close reading of the data is known as initial coding (ibid), these 'pre-coding' actions (Layder, 1998, Saldaña, 2015) are essential to begin the process, in readiness to embark on a more systematic and focused coding process (Charmaz, 2014 p.138).

Following the initial familiarisation stage, the researcher used computer software (NVivo) to conduct line-by-line "*in vivo*" coding of the data, where the codes were derived from the natural language of the responses from participants (Strauss, 1987 pp.33-34). These codes were then grouped, reviewed and refined against the transcripts before proceeding with more focused coding. Focused coding involved the use of the initial codes to sort and categorise the data, and consequently further coding of these the initial codes (Charmaz, 2014 p.138). The process was systematic with the generation of codebooks after each stage of coding, followed by the application and reduction of these codes. Nevertheless, this systematic coding process was inductive, whereby the emergence and refinement of themes were continuously evolving (Guest et al., 2012). However, it is acknowledged that the analysis process can never be entirely inductive, as the researcher's experiences and awareness of the discipline are unlikely to be totally removed from the process (Bryman, 2016 pp.580-581). As Charmaz (2014 p.13) argues, "the researcher's position, privileges, perspectives and interactions" are considered an inherent part of the research, thus the analysis is a construction (ibid).

By codifying the data (Saldaña, 2015 p.9), the outcome of the final stage, was a series of categories and sub-categories with a list of emergent themes. Data saturation had been reached as the properties of the theoretical categories had become 'saturated' with data and these properties revealed the patterns in the data (Charmaz, 2014 p.213). Figure 5-4 summarises the coding and analysis methods:

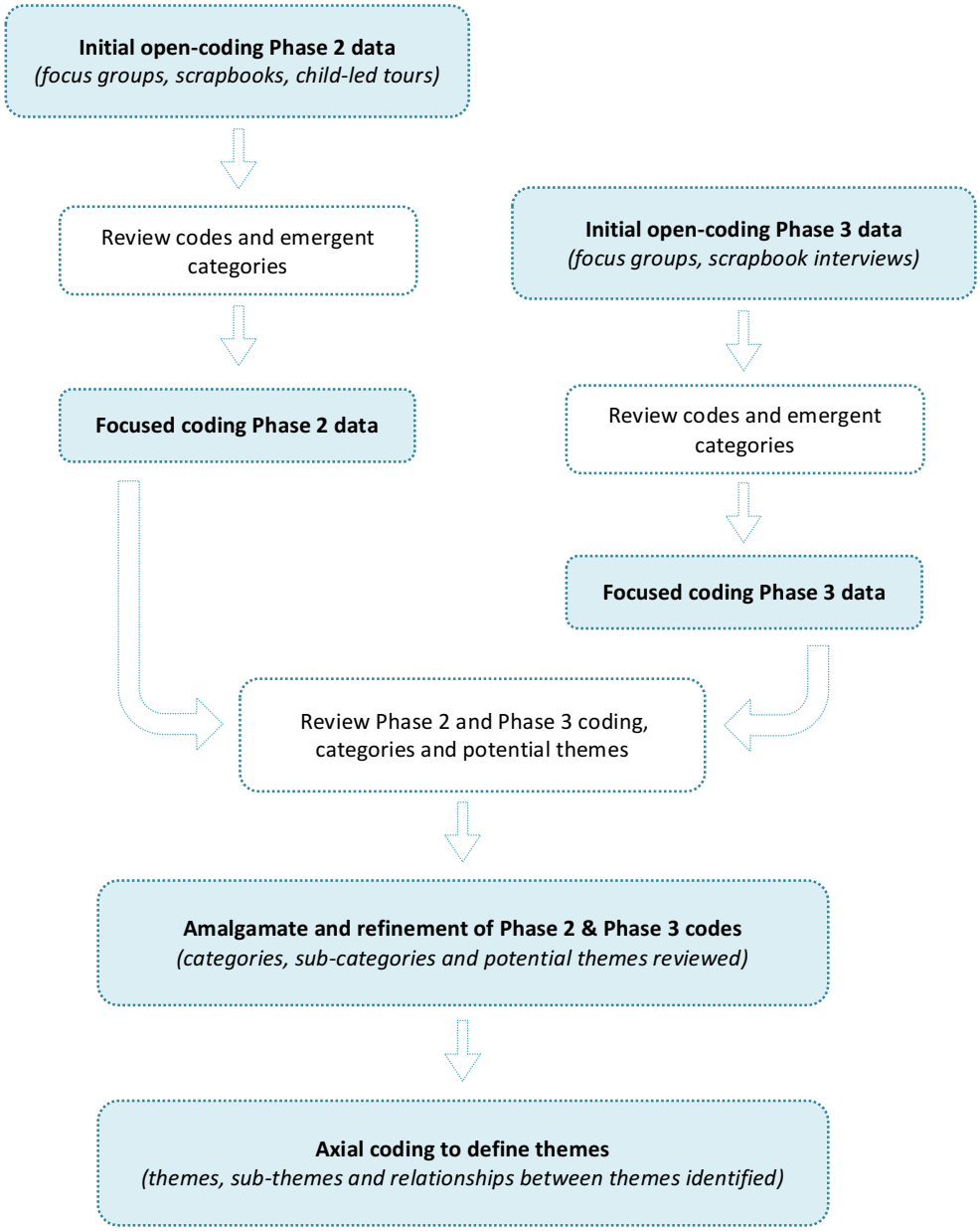

Figure 5-4 Stages of coding in data analysis

Finally, this process was followed by a form of axial coding, whereby the categories and sub-categories were synthesised and reassembled to give coherence to the emerging outcomes (Charmaz, 2014 p.147). Relationships between categories and sub-categories were investigated, examining for links and connections between themes and concepts. This process was undertaken by hand, with reference to multiple codebooks, using Post-It notes to represent the categories and potential themes, which were then arranged and rearranged in an iterative process, to generate

a substantial diagrammatic representation of the analysis. The outcomes of this process formed the basis for the thematic findings chapters 7, 8 and 9.

Memos and diagrams were used throughout each of the coding stages, to record the concepts and possible relationships within the data. The researcher forms an *active* part of the research process (Braun and Clarke, 2006 p.96) and as such, it is important to record ongoing reflexive dialogue. Writing memos and keeping a research journal assisted with keeping track of progress and for reminders of previous thoughts and early theories on various topics (Bryman, 2016 p.577). As Corbin and Strauss (2015 p.119) note, it can be valuable to utilise the journal for self-reflection and to engage in reflexivity, making the researcher more conscious of potential bias, assumptions and influences on interpretations of the data.

5.8 Summary

The development of the research design has been described in detail in this chapter including the development of the methods and research tools, the implementation of those methods, reflections on issues and limitations with the methods and the process undertaken for data analysis. The chapter that follows presents the preliminary findings, followed by three further chapters, which discuss the thematic findings and the relationships between themes, whereby data from all phases is drawn upon to reveal the children's perspectives and experiences in their primary schools.

Chapter 6

Preliminary findings

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6 Preliminary Findings

6.1 Overview of findings chapters

This chapter aims to set the scene for the research context at each of the case study schools, presenting an overview of some of the drawings, photographs and observations. During the initial stages of data analysis there is a familiarisation process undertaken in which the researcher aims to become fully acquainted with the data (Bryman, 2016). There were some immediate findings and observations that could be made from the children's drawings and raw scrapbook data, prior to conducting extensive coding. As such, preliminary findings from the photographic data, across all phases, are presented in this chapter, by providing a summary of the quantity and content of the common photos chosen by the children across the different methods, followed by the findings from the photo rating survey. To conclude, the emergent categories which informed the coding process are outlined. The chapters that follow, Chapter 7, 8 and 9, will discuss the thematic findings of the coding process and data analysis.

6.2 The research context

The observation conducted at each school during Phase 1 provided insights into how the spaces within the environments were used by the occupants of the buildings and became a familiarisation process with the research context. Field notes and observations were transcribed and transferred into digital, textual format. Sketches and drawings were reviewed during this process. This process of reading and reviewing the data gathered 'on-site' allowed the researcher to become more familiar with each of the school settings and contexts. The field notes were used in the data analysis process as a cross-reference for each school and aided triangulation methods. However, it should be noted that the observation data did not undergo an extensive coding process as part of the data analysis as the intention was to remove any potential researcher influence on the data and allow the children's voices to come forth. A summary of each of the school settings provides an overview of the research context for presenting the findings that follow. For drawings of each of the schools, refer to Appendix G.

6.2.1 School A context

Following the pilot study, the Head Teacher and Deputy Head at this school were interested in participating in the research as they were due to move into a new build school at the start of the next academic year, in September 2014. When the pilot study was conducted, it was based at the old school which was housed in two Victorian buildings dating back to the 1870s, separated by a traditional walled playground with a lack of green space. The new school building (Figures 6-1, 6-2 and 6-3), at which the main fieldwork was carried out, is located a short walk from the old school and is located in a small town in north Nottinghamshire. The school is a state-funded average-sized primary school (community school). The new school building was funded using Section 106 contributions from developers, with a total building value of £5 million and it was reported by the architect that it was being built for a similar budget per square metre as the baseline school designs (£1113/m^2) being promoted by the UK Government in 2014.

Figure 6-1 School A Site location

Figure 6-2 School A Exterior

The new building was intended to increase the schools' capacity from 210 to 315 places including a 15-place nursery, with the potential for further expansion as it was located within a new housing development. In 2014 the school had 255 pupils aged 4-11 years old. At the time of conducting the fieldwork, the school was rated as 'Good' by OFSTED. They have a higher than average proportion of pupils eligible for pupil premium

Figure 6-3 School A Main entrance

Figure 6-4 School A School grounds

Figure 6-5 Field to rear of school

Figure 6-6 Surrounding housing development

support;[1] many children being eligible for free school meals and there is a higher than average proportion of children who are supported for special educational needs.[2] The building itself is a single storey building, separating Key Stage 1 and 2, linked by the hall and a central hub space, with considerable outdoor space in terms of floor area, and a large playing field to the rear (Figure 6-5). The school grounds are predominantly surrounded by residential buildings, being located on a new housing development (Figure 6-6). The external space includes a main playground area, including a full-size sports pitch, with separate play areas for nursery and foundation years, allotments, an outdoor classroom hut and a small Trim Trail.

The school's mission statement is "Happy, Inspired, Valued, Successful", with key aims being for every child to be successful in their own right, and developing "independence, resilience and aspirational learners". Children from Year 1 to 6 follow the National Curriculum (2014) whilst the nursery and reception follow the Foundation Stage Early Learning Goals. Following the move to the new building, the school began implementing the Forest School curriculum, with a dedicated teacher to facilitate this. As a community school, they involve the wider school community and work in partnership with the parents.

[1] Pupil premium is additional government funding available for schools to raise the attainment of disadvantaged pupils to try to close the gap between these children and their peers Source: https://www.gov.uk/guidance/pupil-premium-information-for-schools-and-alternative-provision-settings

[2] OFSTED Inspection Report, 28-29 January 2014

6.2.2 School B context

In contrast, this school was built with funding under the Building Schools for the Future programme with a building value of £12.2 million. It was one of the last Primary Schools to be completed under the programme, opening in 2010 and considered as one of the 'exemplar' primary schools, providing places for 720 children (in 2014 this was 684). However, in 2011, the school converted to an academy school. The school is located in a residential area of Nottingham, to the north of the city centre, nestled amongst Victorian terraced houses with a new housing development nearby. The school is significantly larger than the average-size primary school with continuously rising pupil numbers. The majority of which are from White British families, however the proportion of minority ethnicity is described by OFSTED as well above average[1]. The number of children with special educational needs or disabilities is above average and the proportion of children for which the school receives pupil premium is also well above average[2]. At the time of conducting the fieldwork, OFSTED had rated the school as a 'Good' school, identifying that the teaching is sometimes outstanding.

The new building replaced two old Victorian school buildings which housed the infant and

Figure 6-7 School B Site location

Figure 6-8 School B Main Entrance

Figure 6-9 School B Teaching 'hub'

[1] OFSTED Inspection Report, 9-10 January 2014
[2] Ibid.

Figure 6-10 School B School grounds

Figure 6-11 School B Teaching hub interior

Figure 6-12 School B Adventure playground

junior schools. The accommodation provides spaces for nursery to year 6 in three main 'hubs' (Figure 6-11), a separate gym and dinner hall and administration areas, all of which are housed around a central landscaped courtyard with performance space (Figure 6-10). The school is much larger than School A, housing more children, and the separate 'hubs' operate as mini school complexes by themselves. There is a wealth of external facilities provided on a sloping site, including full size sports courts, smaller sports pitches, separate play areas for Key Stage 1 and 2, individual play areas for nursery and reception hubs and an adventure playground set in amongst an area of trees and bushes (Figure 6-12).

The whole school, including staff and children took part in early design workshops to establish the design brief for their new school. The school curriculum was redesigned during the process and the spaces required were determined, so that the building and external spaces would become part of the children's learning. The school's ethos is "Aiming High"; the intention being to provide an outstanding education, focusing on all aspects of the school day: the welcome, playtimes, the curriculum, facilities, opportunities and learning. The school's vision is to create a community where children develop a "love of learning" and create "magical memories". There is a focus on personalised and real-life learning experiences for children to succeed and become valued citizens in the community. They also believe that the school should reflect the surrounding community, supporting families to enable social cohesion.

6.2.3 School C context

In September 2007, School C opened as a new school, amalgamating an infant and junior school, providing 480 places for 3-11 year olds. It is housed on the existing junior school site and was part new build and part refurbishment. Located in a small town to the east of Nottingham, the school is a community (state-funded) school set in a residential street, in an area recognised as having a moderate level of social deprivation. The school is larger than the average primary school and more recently have provided part-time nursery provision. The majority of pupils are White British with a low proportion of minority ethnic groups. The number of pupils eligible for pupil premium is well above average and the number of children with special educational needs or disabilities is also above average.[1] The school implemented a 'nurture provision', which supports children who have specific behavioural, emotional, social and learning difficulties, and is also available for children from other schools for short periods of time. At the time of conducting the fieldwork, OFSTED had rated this school as an 'Outstanding' school[2].

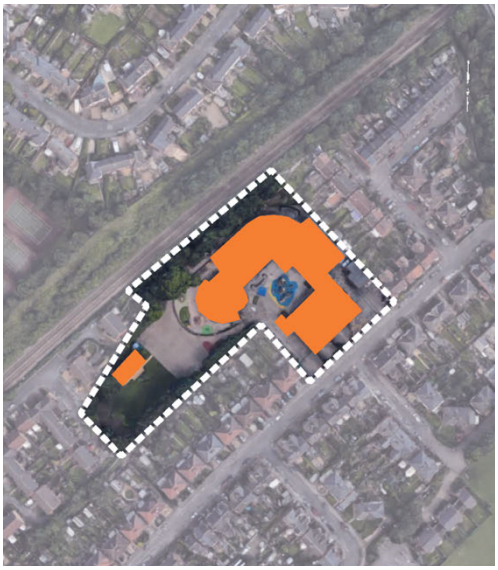


Figure 6-13 School C Site location

Figure 6-14 School C Site overview

The existing school building is a red brick Victorian boys school (Figure 6-14), whose frontage sits almost on the street and many of the existing features remain both internally and externally. The classrooms in the 'old' part of the school are for Year 5 and 6 with an open plan 'studio' space at the

Figure 6-15 School C New extension

[1] OFSTED Inspection Report, 19-20 June 2013
[2] Ibid.

Figure 6-16 School C Site grounds

Figure 6-17 School C Courtyard play park

Figure 6-18 School C Playground areas

centre which was once the old school hall. The new build element (Figure 6-15), housing the majority of the schools' classrooms, the main school hall and foundation unit, forms an arc around the central courtyard-style playground and the external walls provide some bright primary colours. Outdoor space includes play areas and green space, however, the area is smaller than that of the other schools. Some classrooms face the central playground area, dominated by a large, comprehensive play park facility. There is also a nurture centre, The Learning Lodge, on the field, which was newly erected, over the course of one week during the fieldwork period. This is a pre-fabricated, modular 'Schoolhaus' classroom, which is carbon negative, using energy efficient technologies, with a photovoltaic roof system and is clad in cedar wooden panelling. There is a temporary mobile classroom unit in the playground for the nursery and a small field with a school farm. Each classroom has a designated outdoor space, the smallest classroom using it as an extension to their learning space as a reading area with a hanging 'reading pod'. The school is supportive and welcoming, with lots going on at any one time. The school's ethos is to nurture all children: "nurturing the potential of all, striving to be the best we can be". They strive for excellence and "reaching for the stars" to exceed expectations is encouraged. Children are challenged and rewarded for their achievements. The school have developed partnerships with local schools and the community, providing outreach and advice on behavioural and social difficulties in school.

6.2.4 School D context

Opening in 2008, this is a new build, community school which had relocated from an old Victorian building. The site for the new school was the school-owned playing fields, located in a residential area in a suburb of Nottingham, to the north of the city centre. The school provides classroom spaces and a more recently added foundation unit and part-time nursery, for approximately 340 places. The school is larger than the average-sized primary school with most pupils being White British and very few pupils from minority ethnic backgrounds. The proportion of special educational needs, disabled pupils and pupils eligible for pupil premium are all above average[1]. The school is also part of a teaching alliance which enables the sharing of expertise and good practice, and at the time of conducting the fieldwork, OFSTED had rated this as an 'Outstanding' school[2].

The architects had worked closely with the Head Teacher at the school and a list of general requirements were drawn up; for example, no long corridors, the school not to be imposing to young children and no ugly parts to the school (eg. service yards). The school is predominantly round in form (Figures 6-19, 6-20) with a central hall, a corridor circulating the hall with the classrooms to the perimeter. The foundation unit is a recent extension which extends out from the main circulation of the school. There are some

Figure 6-19 School D Site location

Figure 6-20 School D Site overview

Figure 6-21 School D Front Entrance

Figure 6-22 School D Central hall

[1] OFSTED Inspection Report, 8-9 October 2014
[2] Ibid.

Figure 6-23 School D School grounds

Figure 6-24 School D Classroom outdoor areas

Figure 6-25 School D Trim Trail

break out teaching spaces in corridors and the library is open plan onto the corridor, which looks out onto the main playground. Externally, each classroom has an outside space which is sometimes used for lessons, whilst there are additional outdoor learning spaces in the willow tunnel, outdoor classroom and the pond which are mostly used in summer. The school grounds are surrounded by housing and a residential home for the elderly. There is significant outdoor play space (Figure 6-23) for the children including grassy areas, a Trim Trail, playing field and a Multi-Use Games Area (MUGA) and a separate, fenced playground for the foundation unit.

The school follow the National Curriculum and foundation Stage Guidance also including incidental learning and extra curricula activities. Key aims are to provide a safe and secure school where children are happy, where success and achievements are celebrated and children are encouraged to take risks and learn from mistakes. The school believe that their curriculum is designed to inspire happy and motivated children, encouraging children to develop a “love for learning”. Good behaviour and respect for others are specific values at this school, with children learning to take responsibility for their own actions. The school were very welcoming, the children were noticeably well behaved and seemed positively engaged in their learning.

6.2.5 Summary

The schools chosen as case studies for the research have been described in order to provide the reader with the research context, as a prelude to the presentation of findings. This section has highlighted that there are similarities amongst the schools, meeting the intentions of the case study criteria (Table 4-2). To summarise, the key similarities are:

- All schools are 'larger than average' primary schools
- All schools are either a new build school or have had a new extension within the last 10 years
- All schools have an OFSTED rating of 'outstanding' or 'good'[1]
- All schools have similar social demographics and are located in predominantly residential areas
- All child participants were from Year 4 and 5 and aged 8 – 10 years old

The similarities between the case studies minimised the variables and thus reduced the effects of external factors on the research, increasing any potential transferability between cases and the ability to identify commonalities, if similar findings presented themselves.

6.3 Initial findings from the drawings and scrapbooks

During the initial stages of data analysis and the filtering process, it emerged that there were some general observations that could be made from parts of the raw data, namely the children's drawings from the focus groups and the preliminary review of the scrapbooks. The focus group audio recordings were transcribed and analysed together with the other Phase 2 textual- based data. The drawing tasks that were completed during the focus groups, as ice-breaker exercises, proved to be useful in setting the context of the later phases of data collection. The drawing prompts given in each focus group loosely became the discussion topics around which the children talked during the session. It is important to note, that although the initial focus groups were recorded and used as part of the data collection phases, they were used as 'getting to know you' sessions and as such, the drawing prompts given to children

[1] At the time of conducting the field work 2014 - 2015

were broad and open in nature. The physical drawings produced during the focus groups were digitised, however, this visual data was not coded in the same way as the text-based data, rather, it was referred to alongside the coding process. The scrapbooks were initially collected and reviewed at the end of Phase 2 and digitised at this stage. The written responses were tabulated where all children's responses to each question could be read in conjunction with each other and this matrix of information was then coded later in the analysis process.

This Phase 2 data provided a wealth of information, and it became clear that the content of some of the children's direct responses to the questions and their drawings were providing valuable background information that could aid in forming the response to some of the research questions, set out in Chapter 1 and Chapter 4:

How do new[1] primary school environments impact on children, from their perspective?

1. **What factors in a new* primary school environment are considered important to children?**
2. **How do environmental and physical characteristics affect children at school?**
3. **How can the school environment affect children's place experiences?**

Key evidence that could be extracted directly from this data was tabulated initially. Addressing questions 2 and 3, liked and disliked spaces and places were described and factors that were important to children at school could also be identified. There were also some responses related to question 1, in terms of the environmental characteristics. An initial review of the Phase 2 data provided a set of topic areas and question prompts for the scrapbook interviews that were subsequently undertaken in Phase 3. This section aims to provide further insight into the schools under study and the research context by presenting a summary of the general observations made from the scrapbooks and drawings, under the following headings: about the school building; good places at school; places to learn at school; free time at school; dislikes and

[1] *New school buildings are defined as those that have been built as total new build or newly extended within the last 15 years

improvements. Thematic analysis was also performed on this data and the categories and themes which evolved (in conjunction with the outputs from the Phase 3 data) are discussed in detail in Chapters 7, 8 and 9.

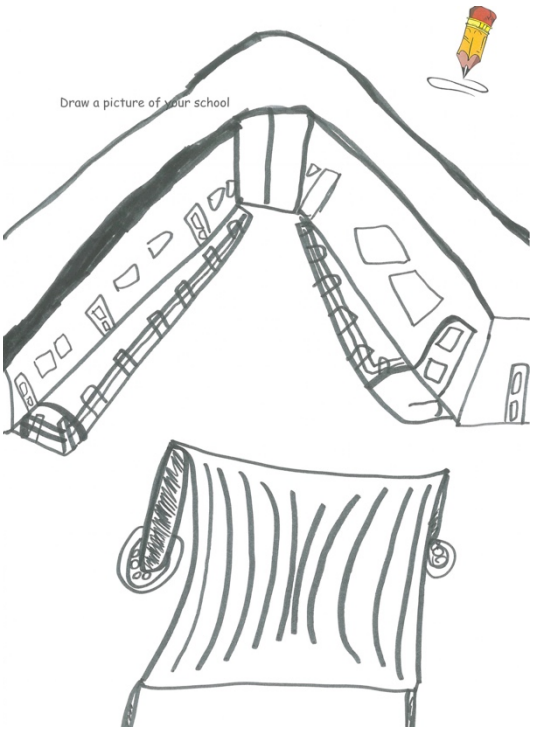


Figure 6-26 Scrapbook drawing, Angela, School A

Figure 6-27 Scrapbook drawing, Lewis, School C

6.3.1 About the school building

Scrapbook questions relating to the school building revealed some of the ways in which children think about their school. Children answered questions in a very positive way, referring to the school building as being something "amazing", with the use of many adjectives to portray their feelings towards it, for example: amazing, beautiful, impressive, fabulous, delighted, legendary and awesome. In addition, there was reference made to environmental or physical characteristics including: "keeps the heat in", "easy to get around in", "unusual but a big shape", "spacious", "colourful", "really big" and having "lots of places to go". School C was the only school where there were any negative answers, referring to the fact that the school could be improved and that it was "crowded but fun".

Scrapbooks also revealed how children perceive their school, how it appears visually and the significance of certain architectural characteristics. Responses about the school building included references to the **size of the school**, **shape of the school**, the **school being colourful** and the **school being new or modern**. Some children likened their school building to other building types; for example, "a New York building" at School B, or "like a museum or house" at School C. The children mostly referred to the school building in terms of how it looks from the exterior, which can also be seen from some of their drawings, as shown in Figures 6-26

and 6-27. Children were asked in the scrapbooks whether they liked their school building, the results of which are shown in Table 6-1. The responses indicated that that most participants, at all four schools, liked their school building or offered alternative comments; for example, "I love it". There were no children at any school who responded with an outright "no" to this question, although there were a few children who were less convinced and some who did not provide a response. To understand why the children might like their school building, the scrapbook question: '*what do you like about it?*' revealed further insights. For School A, there was specific reference to the fact that the school was "new" and many of the responses related to improvements, in comparison to the "old" school, referring to the school being bigger and having more space, as well as the school being newer and cleaner. Across all four schools, similar topics appeared in children's responses, referring to the **space and size of the school**, as well as the **layout of the school** and **colour**.

Do you like your school building?					**Is there anything you do not like about school?**
School	Yes	No	No response/ Other	Example responses	Example responses
School A	12	0	2	"I love it" "I like it because it gives you more room to play and walk around"	"No, I like it how it is" "People dropping rubbish"
School B	13	0	1	"I like our school building because there are lots of opportunities" "I love this building because the layout gives activities and convenient"	"I don't like the lunch time problems" "I don't like the monkey bars because there is a lot of injuries" "The office staffroom is totally visible"
School C	9	0	3	"Yes, because there is a lot of ways of getting lost" "Sort of because there is loads of places and sometimes it gets annoying"	"You can get lost in it" "No, I like all of it"
School D	11	0	1	"Yes, it looks safe and secure" "I like our school building because its modern and not hard to get around"	"I don't like having to share toilets with the other class" "Yes, how the library and hall are big, which leaves the corridor but it's too small when there's like 6-5 classes trying to get through"

Table 6-1: Scrapbooks: Responses to scrapbook questions about the school building

When asked in the scrapbooks about things that were not liked at school, the responses to this question were limited at Schools A, B and C with the anomaly of School D, where eight children did make comments on their dislikes. A general conclusion could be made that there wasn't anything largely disliked at Schools A-C. However, when considering the few comments across all schools collectively, things that were disliked gave rise to the following topics: **behaviour of other children**, **management of facilities** and **design characteristics**. Children referred to "lunch time problems" and "naughty children" as things they disliked, in addition to things like litter, compost heaps and toilets.

6.3.2 Good places at school

To begin to build a picture of the spaces and places that were important to children at school, during the focus groups two of the drawing prompts used were: *'draw your favourite place at school'* and *'draw a place you like at school'*. Table 6-2 indicates example drawings in response to these prompts. The content of these drawings allowed the researcher to become familiar with the types of spaces that children like and spend time in, which, through further discussion, revealed some of their experiences. Discussions such as these were coded as part of the thematic analysis and are discussed in later chapters. Both external and internal places where drawn at all schools. Common internal spaces that were favourite spaces at school included: the library, classroom and hall. There were a variety of external spaces being drawn; for example, play spaces and playground areas, sports pitches as well as spaces within natural environments. Additionally, it was noted during this task, that quiet spaces outdoors, may also be important.

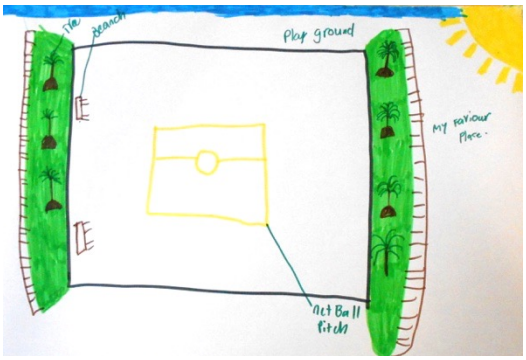
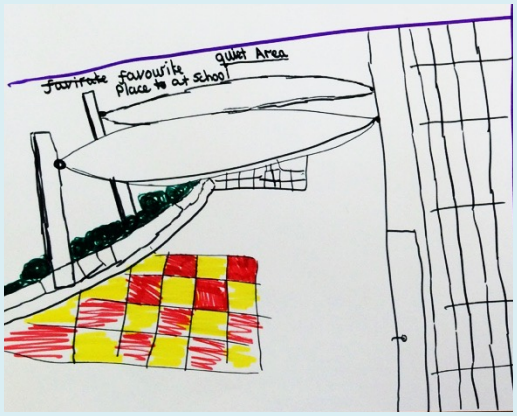
School	Favourite places Drawing content	Number of drawings	Example drawings
School A	Hall Canopy area Hub Library Allotments ICT Room The field Playground	5 2 2 1 1 1 1 1	 *Leah, School A* *Favourite place at school: Playground*
School B	Adventure playground Football pitch Bug hotel Dinner hall Art room Basketball court Courtyard	5 3 1 1 1 1 1	 *Ella, School B* *Favourite place at school: Bug hotel*

Table 6-2 Focus Groups: Drawings of favourite places at school

School	Favourite places Drawing content	Number of drawings	Example drawings
School C	Classroom Football pitch Outdoor area by classroom with reading pod School farm Library Dinner hall Calm down area in classroom	4 2 2 1 1 1 1	 *Ellie, School C* *Favourite place at school: Outdoor area with reading pod*
School D	Multi-use games area Quiet area Hall Classroom Playground Library	4 2 2 2 1 1	 *Theo, School D* *Favourite place at school: Quiet area*

Additionally, as part of the scrapbook questions on good places at school, children were asked: *'where do you feel good or happy in school?'* and *'what do you think makes you happy in these places?'* These questions revealed the spaces that have an impact on children's feelings at school, in this case, their positive experiences. Examples of the children's responses are summarised in Table 6-3:

Where do you feel good or happy in school?			
School A	**School B**	**School C**	**School D**
Classroom Playground Outdoors Everywhere With friends Computer suite	Classroom Playgrounds Sports pitches Lessons Green room	Classroom Outside Play park Calm down area	Classroom Quiet area Playground MUGA (Multi-use games area)

Table 6-3 Scrapbooks: Spaces where children feel happy at school

The classroom was a dominant response for children in all four schools with key reasons being mentioned such as: the act of **learning**; **being with friends**; **feeling safe**; and **the teachers**. Playgrounds and play areas were common spaces mentioned across all four schools with reasons such as: **being with friends**, for **play** and for **chatting**. **Having fun** was also important to children in some of the spaces referred to, whilst other reasons included the environment **being calm** or **quiet**.

6.3.3 Places to learn at school

Places to learn at school were addressed in both the focus group drawing tasks and the scrapbooks. The aim of asking about their learning spaces was to understand which spaces are considered by children as the best places to learn and why they prefer certain spaces. Children were asked in the focus groups to '*draw a place that is good to learn in*'. Spaces that were drawn are shown in Table 6-4 with examples of children's drawings.

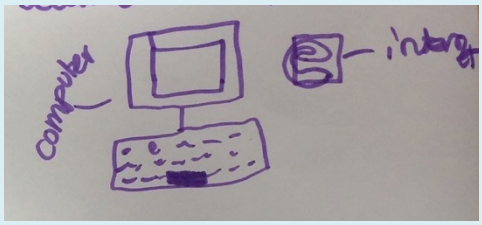
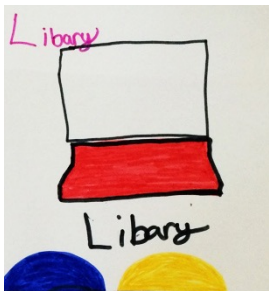
School	Good places to learn Drawing content	Number of drawings	Example drawings
School A	Classroom ICT Suite Teacher	5 4 1	 *Laura, School A* *Good place to learn: Classroom*
School B	Laptops/computers Green room Cosy corner Science class Maths classroom Courtyard	5 1 1 1 1 1	 *Sadie, School B* *Good place to learn: Computers and internet*
School C	Library Classroom Outdoor area by classroom with reading pod Meeting room The field	3 2 2 1 1	 *Summer, School C* *Good place to learn: Library*
School D	Classroom Willow tunnel Playground Maths table	8 1 1 1	 *Belle, School D* *Good place to learn: Classroom*

Table 6-4 Focus groups: Drawings of good places to learn

Drawings of classrooms were common across all four schools, with a total of 17 drawings. However, there were also a number of alternative places to learn drawn by children. Computer facilities were drawn by 9 children, in the form of laptops, computers and the ICT suite. Outdoor spaces were drawn at School C and D as good places to learn; for example, the willow tunnel and reading pod. The drawings provided a list of spaces to probe further in the later stages of the fieldwork and more detailed discussions regarding some of these spaces were coded in data analysis and are analysed in Chapters 7, 8 and 9.

The scrapbooks also contained a section entitled 'places to learn at school' with several related questions. Considering the responses to the question '*where do you think is the best place to learn?*', children's responses indicated the same places as were drawn during the focus groups. However, there were some additional spaces highlighted at each school. Table 6-5 lists the responses with the additional spaces indicated in bold.

Where do you think is the best place to learn?			
School A	**School B**	**School C**	**School D**
ICT room	Classroom	Library	Classroom
Classroom	Green room	Classroom	Willow tunnel
Hub space	**Hub space**	Field	**Outdoor classroom**
Outside	**Hall**	Meeting room	**Multi-use games area**
	Library	Outside	
	Outside	**Pond area**	
	ICT room		

Table 6-5 Scrapbooks: Best places to learn

Generally, the classroom was considered the best place to learn at all four schools, corroborating the drawings produced during the focus groups. Yet, there were also several responses at School C, in which the library was considered the best place to learn. Reasons why the classrooms were to be considered the best place to learn

included: the **environmental conditions**, having the **equipment** required for learning, the **teachers** and the classroom being a "**fun**" place.

Outdoor areas used for learning were also mentioned frequently and when reviewing the results collectively, reasons given for why certain outdoor areas might be the best places to learn included: **getting fresh air**, the idea of being outdoors seemed to **motivate** some children and places being **calm or peaceful**.

Children were also asked in the scrapbooks; '*what is good about your classroom?*' Elements that children considered to be good in the classroom fell loosely into the following categories: **technology and ICT**; **environmental characteristics**; **visual elements**; **people** and **physical features**. A summary of the responses are shown in Table 6-6:

What is good about your classroom?			
School A	**School B**	**School C**	**School D**
Interactive whiteboards Colourful working walls CO_2 sensor Skylights Warm View from window Lots of space	Fun to learn in Colourful things Displays Whiteboard Big	Lots of ways to learn Games Colourful Calm down area Small Full of friends Displays Nice teachers Door to play park	Vast / big Nice place to learn and feel safe Being with friends Electronic whiteboard Spacious so keeps sound in Everything Lots of places

Table 6-6 Scrapbooks: Good things about the classroom

Interactive whiteboards and **displays** were a common element of the classroom that the children referred to as well as references to **colour**. The whiteboards and displays were described as elements that assist with learning; for example, at School B, the whiteboard was considered "clear and easy to read".

Additionally, children were asked what was not so good about their classroom and there was little consistency between schools in the answers. At School A, there was a general consensus that there was nothing significantly wrong with the classrooms. However, there were comments relating to the thermal environment and the physical space. It was suggested that the classrooms in School A are "too hot" and when referring to the general classroom layout, children suggested that the tables take up too much space. For School B children, negative comments about the classroom generally referred to it being "messy" or untidy with "displays falling off the walls". At School C, negative comments related to the size of the classroom and the fact that the classroom was cramped with "too many people". A few of the children at School D suggested that "everything is great", however, there were some negatives mentioned, including cramped furniture layout, the lack of comfort of the chairs and it seemed that there might be issues with glare impacting on the children's ability to work in the space. Elements that children had reported on, were tabulated and their similarities enabled them to be grouped into the following categories: **technology and ICT**; **environmental characteristics**; **visual elements**; **people** and **physical features**.

Alternative spaces where the children liked to learn were also identified in the scrapbooks and are summarised in Table 6-7:

Are there any other places, other than the classroom, where you like to learn?			
School A	**School B**	**School C**	**School D**
Hall	PE Hall	Field	Hall
Hub space	Hub spaces	Pond	Library
Library	Green room	Library	Tables outside
Spare classrooms	Outdoor PE	Meeting room	classrooms
ICT suite	Other classrooms	Calm down area	Outdoor classroom
Outside	Outside	Group room	Staffroom
		Outside	MUGA

Table 6-7 Scrapbooks: Alternative places to learn

At School A, the hall was the most common place mentioned where the children suggested that they like to learn. It was common at School B for the children to like classrooms other than their own[1]. This could be linked to the fact that their core subject lessons do tend to take place in different classrooms, located around the central open plan hub space. References at School B to learning outdoors were made, with both the field and courtyard being referred to as learning spaces. At School C, preference was for the library, with other smaller, quiet spaces being mentioned, along with external spaces including the field and the pond. At School D, the outdoor classroom was listed as a good place to learn along with some of the other outdoor spaces. This school was more set up for learning outside, utilising both the outdoor classroom and the willow tunnel. It was noted during the initial review of the data on places to learn, that the answers were lacking in detailed descriptive explanations, therefore, this was addressed in the scrapbook interviews during Phase 3, the outcomes of which are discussed as part of the thematic analysis in Chapters 7, 8 and 9.

6.3.4 Free time at school

To explore children's experiences in spaces and places at school and to begin to understand how characteristics of their environments might begin to impact on them, children were asked about their free time at school, mainly playtimes and lunchtimes. During the focus groups children were asked to draw their favourite place to play or a place the liked to relax, responses are indicated in Table 6-8:

[1] School B operated much like a Secondary School, in that the children would go to different classrooms for different lessons and subjects.

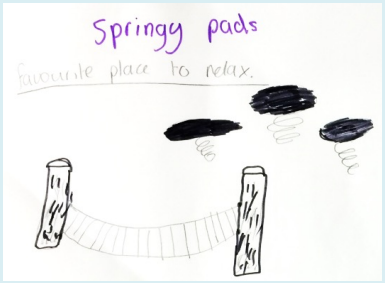
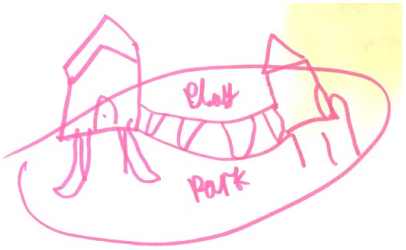
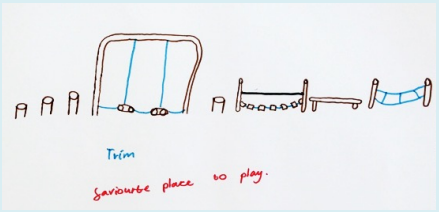
School	Places to play	Number of drawings	Places to relax	Number of drawings	Example drawings
School A	Football pitch Playground Field	5 2 1	None	0	 *Simon, School A* *Place to play: Football pitch*
School B	None (Note: children had already drawn places to play as "favourite place at school")	0	Boat Springy pads Bench Black pitch Adventure playground Rope bridge Nowhere	2 1 1 1 1 1 1	 *Faith, School B* *Place to relax: Springy pads*
School C	Play park Library Football pitch Slide Benches near gates	3 2 2 1 1	None	0	 *Jennifer, School C* *Place to play: Play park*
School D	Trim trail Field Playground Also noted: Friendship bench Wall for 'Dob' Caterpillar on ground	6 2 2	None	0	 *Graeme, School D* *Place to play: Trim Trail*

Table 6-8 Focus groups: Drawings of places to play and relax

Common places to play included the playground and sports pitches. These spaces which may have previously been drawn for the prompt asking for favourite places at school. However, there were some additional specific places drawn; for example, the benches at School C and D and "the wall for Dob" at School D. Considering the prompt for 'places to relax', drawings were of smaller more intimate areas; for example, the boat and springy pads at School B, whilst it was also noted that one child at School B proclaimed there was "nowhere" for them to relax within the school.

Scrapbooks asked the children to name their favourite outdoor area at school and to explain why this was a good place and how they felt in this space. Various play areas are provided at each of the schools and children chose a range of spaces as their favourite areas on both a large and small scale, from the whole playground to the more intimate spaces. Table 6-9 below lists the children's favourite outdoor areas:

What is your favourite outdoor area?			
School A	**School B**	**School C**	**School D**
Canopy/sitting area	Adventure	Football pitch	Multi-use games area
Goals	playground	Play park	Quiet area
Football pitch	Bug hotel	School field	Trim trail
Grass near bikes	Slide	Benches	Playground
Grass near field	Basketball pitch	Bottom pitch	Willow tunnel
Playground	Football pitch		
	Black pitch		

Table 6-9 Scrapbooks: Favourite outdoor spaces

Reasons as to why the children think the playground and play areas are good places revealed more than just merely "because you get to play there". Some children reported "feeling free", the ability to "get fresh air", feeling "excited", "having fun" and "having space to run around" as also important. It was also noted that spaces for children to relax provided comfortable surroundings and peacefulness, allowing them to sit and "chit chat" with friends. In summary, several categories emerged from the tabulation and initial coding of this section, which appeared to be important for children's social time whilst at school. Emergent categories included: **variety**,

freedom, **getting fresh air**, **having fun**, **relaxation** and the **importance of social interaction**.

6.3.5 Dislikes and improvements

When proposing anything at school that could be improved in the scrapbooks, children's responses across all four schools tended to be related to increasing the size of specific spaces and improvements in equipment; for example, due to injury or the need for more variety in the playground.

In the focus groups, drawing prompts relating to disliked places or areas that might need improving were used to ensure children were thinking about their school settings in both positive and negative ways. Due to time constraints during the focus groups this drawing prompt was not always used, therefore responses to this prompt were only provided by some of the children (School B (n=8), School C (n=6) and School D (n=10)) and at times were in the form of written answers rather than drawings. Therefore, this information required further interrogation in later stages of the fieldwork. However, responses from the Phase 2 focus groups are listed in Table 6-10. Drawings included whole spaces as well as general improvements suggested for the school, some of which may have personal connotations for the children. There were also references to space-related elements, including: larger corridors, access to the willow tunnel, the outdoor classroom and access to changing rooms.

School	Places disliked / need improving	Improvements
School A	Drawing prompt not used	Drawing prompt not used
School B	Football pitch Tyre swing Time out room Nursery playground Nursery/reception	Drawing prompt not used
School C	Railway Staffroom "Everywhere is fine"	Office Museum / studio
School D	Drawing prompt not used	Outdoor classroom To have nap time Watching TV and playing games Power naps More PE equipment Balls on playground Changing rooms Trim trail Access to willow tunnel Larger corridors

Table 6-10 Focus groups: Disliked places and improvements

Nevertheless, it should be noted that there is potential for pre-conditioning in the children's responses within this research and particularly when discussing potential 'improvements' or places that children might 'dislike' at school. For example, teachers referring to parts of the school that they themselves dislike or elements of the environment that are impacting on their daily experiences, whilst there is also the potential impact of parents' views on the children to consider. The limitations of the research are discussed further in Section 10.5.

6.3.6 Summary

The aim of the focus groups was to stimulate the children's thinking about their environmental context and the wider school setting and this, coupled with the written answers to the scrapbook questions revealed some general findings relating to

children's thoughts about their school environments. This section has presented an overview of some of the preliminary observations that could be made from the questionnaire-like responses and drawings. Children's thoughts about their school building have been presented, including their comments on good places at school; their views on the best places to learn; their preferences for outdoor spaces used for play time; and their ideas for potential improvements at school. The information presented here indicates children's general thinking about their environments. Some of this data helped to provide a basis for developing the methods for Phase 3, including question prompts for the interviews and focus groups. The general outcomes from this data also acted as a triangulation method for the themes which emerged from the extensive coding process that followed. As noted in this chapter, there was much elaboration on some of the questions during the subsequent scrapbook interviews, this was coded with the additional Phase 3 data and the thematic outcomes are analysed in Chapters 7, 8 and 9.

6.4 Findings from the photographic data

Across the participatory methods, there was multiple use of the photographs taken by the children. The final data obtained consisted of the following:

- Child-led tours: Photographs taken on child-led tours and selected by the children for discussion
- Scrapbooks: Photographs selected by the children (from their complete set of photos taken on the child-led tours) for inclusion in the scrapbooks; and
- Photo-rating survey: A complete set of photos (as selected by children on the child-led tours) rated on scales of liked/disliked and important/not important

The original photos selected by the children on the child-led tours, during Phase 2, indicated some of their initial thoughts about school and what might be important to them. Photos selected for the scrapbooks, during Phase 3, provided a further insight into what children consider important to them at school. The photo-rating survey provided a method of triangulation, to identify the key photographs that were liked or disliked, whilst confirming those that might be important or not important. As the original photographs have been reused as part of subsequent data collection, these findings are presented together in this section. This aims to provide further insight into the schools under study and the research context by presenting a summary of the general observations that can be made from the photographic data, under the following headings: internal spaces and places, external spaces and places, physical elements, displays, facilities and technology, objects and signage and people. Photographic data is also embedded within the interview transcripts, focus group transcripts and scrapbook data and similarly to the data presented in the previous section, thematic analysis was also performed on this data. As such, the categories and themes are analysed in Chapters 7, 8 and 9.

6.4.1 Photographic data: child-led tours

During the child-led tours, each child was asked to choose 10 photos from the set of photos they had taken. These photos were then discussed which included a description of what was important to them in the photo. Each child's photo interview was fully transcribed and coded in the data analysis process. Transcript data for the child-led tours and the photo reviews were tabulated along with the children's photos, so that text-based information could be read in conjunction with the visual information for coding. The number of each type of photo selected was also recorded and tabulated in a matrix, to build a general understanding of the types of spaces and places the children were drawn to in their schools. When reviewing the data across all four schools, the selected photographs were grouped depending on their content, as reported by the children in their interview and coded during the initial open coding process; this led to the three categories emerging: **spatial**, **items** and **people**. The sub-categories found within these broader topics are indicated in Table 6-11:

Category	Sub-category
Spatial (photos described by children as a specific 'space' or 'place' or referring to a physical element in the image)	- External spaces and places - Internal spaces and places - Physical elements
Items (photos described by children as a 'display' or referring to a specific 'facility' or an 'object' or 'sign' within the image)	- Wall displays - Physical displays - Facilities and technology - Objects - Signage
People (specific people in the photo as referred to by children)	- Teachers and staff - Friends - Family members (eg. siblings or cousins)

Table 6-11 Photo categories for child-led tour data

There was a large number of photos collected at each school due to the child-led tours. Some children took 20 photos in the forty minute tours, whilst others took over 100! However, the photos that were considered for analysis were those that were chosen by the children for discussion. The numbers of photos within each of the categories and the total number of photos considered for data analysis at each school are shown in Table 6-12:

Category	Sub-category	Photos at School A	Photos at School B	Photos at School C	Photos at School D	Totals
Spatial	External spaces and places	37	63	41	54	195
	Internal spaces and places	24	35	37	28	124
	Physical elements	0	9	6	2	17
Items	Wall displays	39	13	32	17	101
	Physical displays	16	4	2	3	25
	Facilities and technology	6	4	0	3	13
	Objects	12	9	11	8	40
	Signage	10	2	2	5	19
People	People	9	2	5	0	16
Totals	-	153	141	136	119	-

Table 6-12 Numbers of photos from child-led tour elicitation

Reviewing the numbers of photos, within the 'spatial' category, there were more photos of external spaces chosen to be discussed, with 61% of the total in this category. The numbers also highlight that the importance of visual displays for the

children. However, although technology appeared to be photographed frequently during the child-led tours, photos related to facilities and technology at school were the least selected, and therefore least discussed by the children in this task.

6.4.2 Photographic data: scrapbooks

During the focus groups in Phase 3, each child was given copies of the photographs that they had taken during the child-led tours. Children were asked to select the most important photos to them, to include in their scrapbooks and were then asked to write a sentence about each photo, which they also discussed verbally during the focus group. Audio data for the focus groups were fully transcribed and coded as part of the thematic analysis. The chosen photos for inclusion in the scrapbooks were also tabulated for analysis. The selected scrapbook photos acted as a triangulation method, revealing the key photos that were selected most frequently by the children for both methods. This allowed key spaces, places and objects etc. in each of the school environments to be identified and enabled the researcher to ascertain the key elements in the schools that children feel are important. A summary of the types of photos chosen by children at each school, for inclusion in their scrapbooks, can be found in Appendix D. The analysis as to why such characteristics might be important to children is discussed in the thematic analysis; Chapters 7, 8 and 9.

By tabulating the photographs, categories which had evolved from the coding of the child-led tour photos (Table 6-11) also became evident when reviewing the scrapbook photos. As such, the preliminary findings emerging from both the child-led tours and the scrapbooks are summarised together in the text that follows.

6.4.3 Internal spaces and places

Figure 6-28 School hall at School A

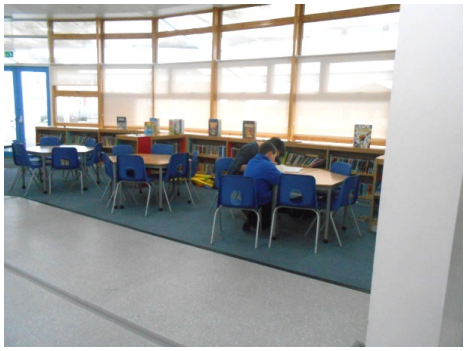


Figure 6-29 Library area at School D

Considering the photos taken during the child-led tours in the **internal** school environment, across all four schools, the **school halls**, **libraries** and **classrooms** were the most popular internal spaces photographed and selected by the children during the elicitation. Interestingly, the library areas at School B were not chosen to be discussed even though some children had photographed these areas. This could be due to the fact that the libraries at this school were not necessary designated as 'libraries' but more reading areas within open plan hub spaces. The classroom was discussed by some children at School C in a negative context, and at School A, none of the children chose to talk about any photos of classrooms even though many were taken. The most commonly discussed photos during the child-led tour photo elicitation are shown in Figure 6-30[1] (see Appendix E for enlarged image).

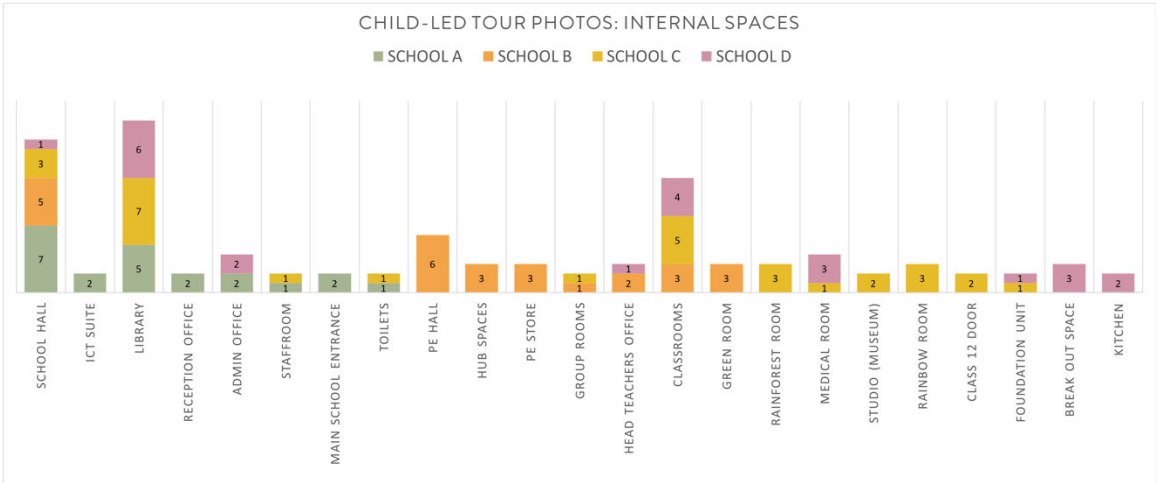


Figure 6-30 Child-led tour photographs of internal spaces discussed in photo elicitation

[1] Photographs that were specific to a particular school where only one photo had been chosen by a single child have been excluded from this bar chart.

The photos of internal spaces, selected for the scrapbooks, confirmed the findings from the child-led tours where **school halls**, **libraries** and **classrooms**, were the most important spaces for the children at Schools B, C and D. Although, at School A, the ICT suite was the only classroom space chosen for the scrapbooks and there were no library photos selected. Popular internal spaces at School B seemed to be the sports hall[1] and PE store. It is also evident that photos of internal spaces were infrequently selected at School B, with a prominence of photos of external spaces. The most commonly discussed photos during the elicitation are shown in Figure 6-33[2] (see Appendix E for enlarged image).

Figure 6-31 Classroom at School A

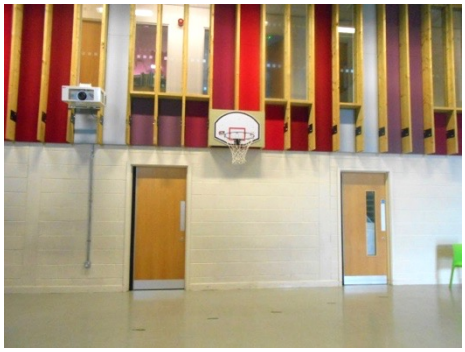


Figure 6-32 Sports hall at School B

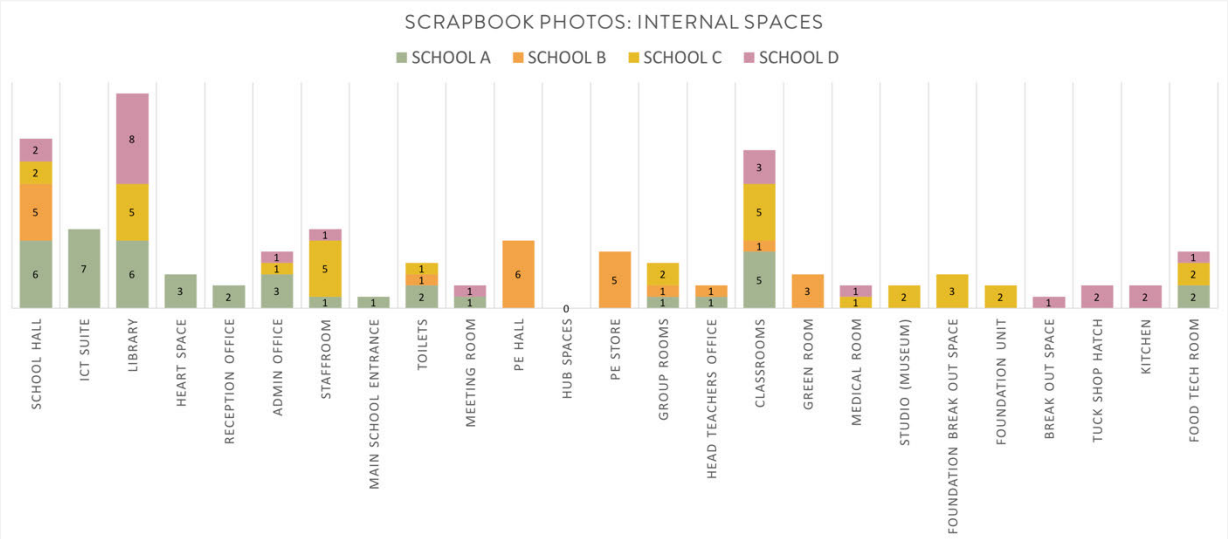


Figure 6-33 Scrapbook photos of internal spaces

[1] At School B, there were two halls, a dining and assembly hall and sports hall for physical education

[2] Photographs where only one photo had been chosen by a single child have been excluded from this bar chart.

6.4.4 External places and spaces

Figure 6-34 Field at School B

Figure 6-35 Pond at School D

External spaces were well photographed at all four schools on the child-led tours and within this category there were many photos selected by the children for discussion. Generally, **playground areas**, **play parks**, **sports pitches** and the school **field** were common amongst the photos selected for discussion. In addition, areas of the school grounds used for growing plants or nurturing wildlife were popular amongst the photos selected. The importance of places to sit down or quiet areas also became apparent, with photos of various seating areas, quiet areas and outdoor classrooms being photographed at all schools. The most commonly discussed photos during the elicitation are shown in Figure 6-36[1] (see Appendix E for enlarged image).

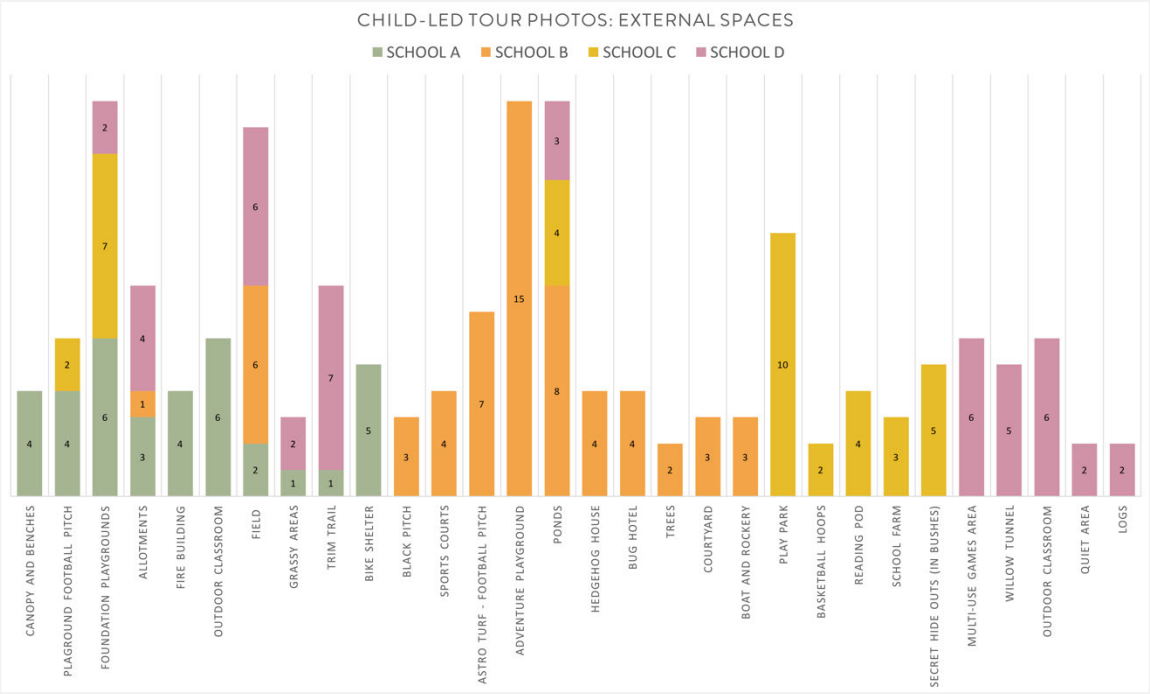


Figure 6-36 Child-led tour photos of external spaces discussed in photo elicitation

[1] Photographs that were specific to a particular school where only one photo had been chosen by a single child have been excluded from this bar chart.

Reviewing the photos included in the scrapbooks, external spaces were extensively chosen by children. As with the child-led tours, the most popular spaces were **playgrounds**, **play parks**, **sports pitches** and the **field**. The adventure playground at School B appeared in 25 of the photos chosen for the scrapbooks. For example, the red ropes at School B, nicknamed "The Flying Machine" (Figure 6-38) appeared 5 times in scrapbooks. Areas under the umbrella of 'natural environment' were also significant, with ponds, homes for wildlife and the school farm at School C being selected as well as gardens and allotment areas. Various quieter outdoor spaces also remained important, outdoor classrooms, willow tunnels and places to sit and chat with friends (Figure 6-37) were commonly chosen across all four schools. The most commonly selected photos are shown in Figure 6-39[1] (see Appendix E for enlarged image).

Figure 6-37 A place to sit and chat, the outdoor classroom School A

Figure 6-38 Red ropes, 'The Flying Machine' at School B

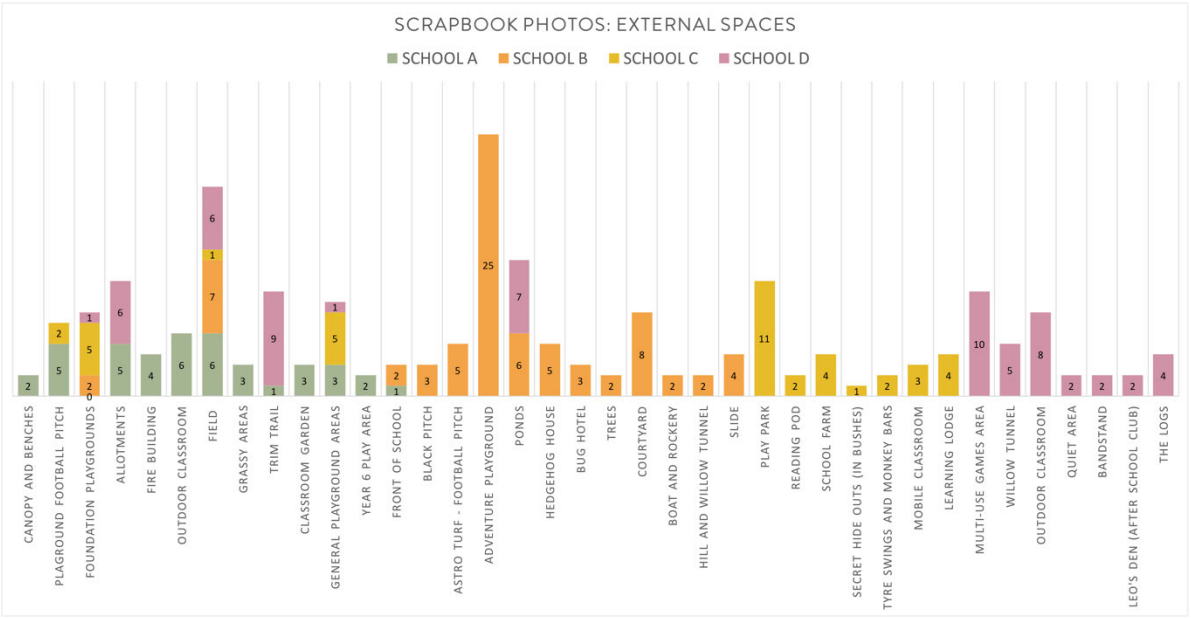


Figure 6-39 Scrapbook photos of external spaces

[1] Photographs where only one photo had been chosen by a single child have been excluded from this bar chart.

6.4.5 Physical elements

Figure 6-40 Coloured boards at School B

Figure 6-41 Rock in play park at School C

Figure 6-42 Entrance gates at School D

Photographs that formed this category were related to **elements of the physical environment** rather than a defined 'space', as had been described by the children when discussing the photo. For example, doors, windows or external cladding. Within the photos selected by School A children, there were no photos selected that would fall into this category. It is also worth noting that this category was one of the least populated with selected photos and as such resulted in little repetition of the content. The emergence of this category was due to the significant number of photos taken at School B, where the photos were related to physical features. This was also evident in the scrapbook photos, School B children included 5 photos in this category, whilst there were none at the other schools. Some of the key elements referred to by the children are the "shiny cladding", "coloured boards" (Figure 6-40), the roof over a hub entrance, the central pine tree near the courtyard, steps, walkways and revolving walls in the classrooms. There were also a few photos from School C and D in this category and these were mostly related to objects in external spaces; for example, the large rock in the play park (Figure 6-41) or the entrance gates (Figure 6-42).

6.4.6 Displays

At all four schools, children photographed many of the displays around their schools including wall displays or physical objects on display in classrooms. Wall displays which represent achievements (Figure 6-43) and children's work, specifically, children's framed art work (Figure 6-44), were commonly photographed and were selected by children for discussion during the reviews and included in their scrapbooks. At School A, there are large graphics (Figure 6-45) applied to some of the walls in circulation spaces around the school with images of animals and text extracts with informative 'facts'. Many photos were taken of these graphics during the tours with 7 children choosing to talk about these photos and 8 children then choosing them for the scrapbooks. Framed photographs of the old school were frequently included in the scrapbooks at School A with 10 photos being selected. At School B, wall displays seemed less popular in the scrapbooks, however, children's work and artwork were still evident. Displays chosen for the scrapbooks at School C were plentiful and focused on achievements, awards, children's work and school trips. Children's framed artwork was important at School D, appearing 7 times in children's scrapbooks. Physical displays photographed included objects which the children had either made themselves or where they had a personal connection to the objects; for example, a sibling's display.

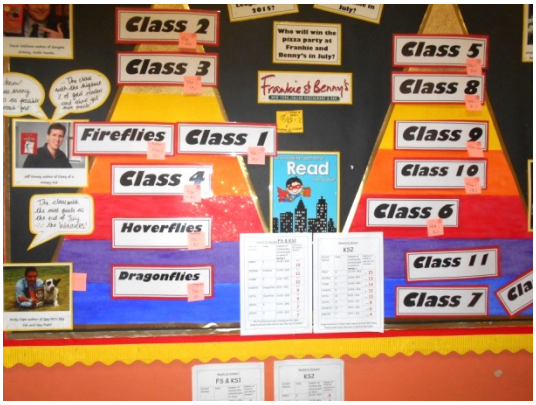


Figure 6-43 'Reading Super League' at School C

Figure 6-44 Children's framed artwork at School D

Figure 6-45 Animal wall graphics at School A

6.4.7 Facilities and technology

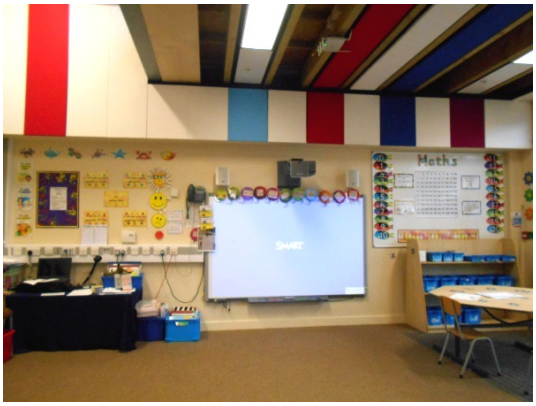


Figure 6-46 Smartboard in classroom at School B

Figure 6-47 Computer in classroom at School A

Figure 6-48 Bike storage at School B

During the initial observation and the child-led tours, it was evident that the use of technology plays a large part in the children's lives across all four of the school environments. However, this is perhaps less so at School C, where there are no computers in the classrooms and only laptops available from a store cupboard within another classroom. This absence of technology was also evident on the child-led tours at School C, from the lack of photos that related to technology being selected. Whereas at all other schools, **smart boards** and **computers** or **laptops** were commonly photographed on the tours and were mainly located in classrooms or within a separate ICT suite. Technology emerged as a category in the scrapbook photos: technological equipment appeared in 6 photos at School A, 8 photos at School B, 3 photos at School C and 3 photos at School D.

Within the 'facilities' category, the importance of **bicycle storage** (Figure 6-48) was highlighted by children at Schools B, C and D on the child-led tours and was also common when selected for the scrapbooks at Schools A and B.

6.4.8 Objects and Signage

A range of photos from the child-led tours were grouped in the 'objects' category including; rubbish bins (Figure 6-49), litter, school pets (eg. fish tank), trophy cabinets and coat hooks. There were also a wide range of photos of objects selected for inclusion in the scrapbooks across all schools, however, once the photos were coded, there were very few specific objects appearing multiple times. Some examples included: at School A, 'The Sweating Tent[1]' (Figure 50) was selected 3 times; at School B, a fish tank was selected 3 times; at School C, the piano was selected twice and at School D, a display cabinet was selected twice.

Figure 6-49 Compost bin at School A

The 'signage' category was populated with **welcome signs** and **specific school signage** For example; wayfinding and instructional signs and the school logo, school name and entrance signs at School A (Figure 51).

Figure 6-50 The Sweating Tent at School A

6.4.9 People

Photos of people consisted of: friends, teachers and other members of staff. However, at School D, no photos which specifically referred to a person were chosen for discussion. At the other schools, photos of children's teachers and friends or family (eg. siblings at the school) were selected.

Figure 6-51 Entrance sign at School A

[1] The 'Sweating Tent' was a life-sized structure built by the children and their teachers, in the classroom, as part of a school project on the Mayans. Children liked to sit on the floor inside this structure with friends.

6.4.10 The Photo Rating Survey

The photographic data from the child-led tours and scrapbooks offered an insight into preferred spaces and places and elements in the school environment that might be important to children. In order to confirm some of these findings, the results obtained from the photo rating survey aimed to identify where there were similarities in opinion for the most liked/disliked and most important/not important places at school, to triangulate the photographic data and validate the findings from the other methods. As discussed in Section 5.4.3, the children were given a booklet with the collated photos and children rated each photo on two rating scales (refer to Appendix E). Collation and tabulation of the results allowed clarification of the most liked/disliked things at school and those photos that were important/not important and it was possible to draw some conclusions where there is a strong agreement between the children on their views.

The results for each participant were tabulated against each photo in the survey and the children's ratings for each scale were then totalled. The 'like a lot' and 'liked' scales were added together as were the 'important', 'disliked' scales. These totals allowed the researcher to cross compare between the rating scales; for example, identifying those photos that were both 'liked and important' or 'disliked and not important'. Such results were determined where over 50% of children at each school had chosen the same rating for any particular photograph. An example of the tabulated data is shown in Figure 6-52 and the findings for each school are presented in the tables, in the sections that follow.

School A

Photo 1

Totals

Like alot	Like	Not Sure	Dislike	Dislike alot
10	2	1	0	0
Very Important	Important	Not sure	A little important	Not important
8	3	0	0	2

Over 50% of children voted for 'liked a lot' and 'very important'

Photo 2

Like alot	Like	Not Sure	Dislike	Dislike alot
4	1	2	2	2
Very Important	Important	Not sure	A little important	Not important
1	1	5	1	2

Inconclusive results for this photo

Figure 6-52 Photo rating survey tabulation

(Totals indicate the number of children choosing that rating for the photo)

School A

At School A, it can be seen from the tabulated information (Table 6-13 and 6-14) that children had generally said they 'liked' most of the photographs that they were shown. However, the 'important' category defined which of these liked elements within the school environment are meaningful and important to the children. There were only 5 photographs out of 86 where there was no dominant scale chosen, where children were unsure how to rate the photo. The results showed that most types of photos which were both liked and considered important, seemed to be photos of 'objects', including signage and displays. These findings also highlight the importance of the key external spaces, including the **field**, the **allotments** and the **playground**. The importance of the **ICT suite**, **library**, **school hall** has been confirmed, as previously raised in both the child-led tour and scrapbook photographic data. However, the most important internal space was identified as the **waiting area** in the school reception. The toilets are disliked by half of the children and it was felt that the pile of rocks in the allotment area is not important. The extended list of tabulated findings for School A can be found in Appendix E.

School A Photo Rating Survey: Disliked / Not important			
Disliked	**Number disliked (out of 13)**	**Not important**	**Number not important (out of 13)**
Toilets	7	Pile of rocks	8

Table 6-13 School A Photos: Disliked and not important

School A Photo Rating Survey: Liked and important		
Liked AND important	**Number liked (out of 13)**	**Number important (out of 13)**
External places		
Field	13	10
Allotment	11	9
Playground football pitch	10	8
Bike shelter	12	7
Playground (general)	10	7
Tyres for plants	9	7
Internal places		
School reception waiting area	12	11
ICT Suite	13	10
Library 2	11	10
School hall 1	10	10
School hall 3	10	9
Admin office	10	9
Library 1	10	8
School hall 2	11	7
Entrance lobby	9	7
Objects		
Old school photos 1	12	12
Old school photos 2	12	12
School logo	12	11
Staff photo display	12	10
School name signage	13	9
TV screen (games)	12	9
Computer in classroom	12	9
Ceiling projector	11	9
Recycle robots 4	10	9
Recycle robots 1	11	8
World map table top	11	8
Map of the world	10	8
Recycle robots 2	10	8
Whole school hand print display	10	8
Entrance sign	10	8
Op Art display	8	8
Meerkat display 1	12	7
Bookshelves in library	11	7
Artwork display	10	7
Recycle robots 3	10	7
Water cooler	10	7

Table 6-14 School A Photos: Rated liked and important

School B

Whilst at school A, there were very few photos ranked as disliked or not important, at School B, there were more photos ranked as 'disliked/not important' or the 'not sure' categories. Children **disliked litter** and the photo of the **muddy boat** was both disliked and rendered unimportant by half of the children. The uncovered pond area seemed to be unpopular, whilst the **pond** with the metal cover had been identified as both liked and important by children. This suggests that children dislike untidy and unkempt areas. However, there were a number of external areas rated as important; the **bug hotel** was ranked as most important with 13 out of 14 and two photos showing the **adventure playground** were also popular. Interior spaces that were liked and important were similar to those chosen at School A, including the **classroom, library** and **hall**. Additionally, the **head teacher's office** was deemed important. **Entrances** to and within School B were also considered important, with both the front of the school and the entrance to the year 2/3 hub identified as being both liked and important. The extended list of tabulated findings for School B can be found in Appendix E.

School B Photo Rating Survey: Disliked / Not important			
Disliked	**Number disliked (out of 13)**	**Not important**	**Number not important (out of 13)**
Litter	10	Litter	10
Uncovered pond area	9	Uncovered pond area	9
Overflowing rubbish bin	9	Yellow tree in wild area	8
Muddy boat	7	Muddy boat	8
		Tree	8
		Yr 6 sculpture	8
		Springy pads	8

Table 6-15 School B Photos: Rated disliked and not important

School B Photo Rating Survey: Liked and Important		
Liked AND important	**Number liked (out of 13)**	**Number important (out of 13)**
External places		
Bug hotel	8	13
Gardening area	4	12
Adventure playground 2	11	11
Adventure playground 1	13	10
Pond with metal cover	9	9
Yr 2/3 hub entrance	8	9
Front of school 2	4	9
Front of school 1	7	8
Internal places		
Classroom 2	11	13
PE store	11	12
Library corner	10	12
Sports hall 1	10	12
Canteen hatch	10	12
Head teacher's office	7	12
Sports hall 2	12	11
Classroom 1	11	11
Green room	11	11
Dining hall	9	11
Yr 4 hub	9	10
Dinner hall	8	10
Ocean room	6	10
Reading corner	9	9
Yr 6 hub	8	9
Time out room 1	7	9
Time out room 2	5	9
Foundation hub	6	8
Objects		
Trophy cabinet 2	13	12
Sound system controls	8	12
Trophy cabinet 1	13	11
Tuck trolley	11	10
Handmade sign	7	10
Fish tank in nursery	11	9
PE kit in store	11	9
Children’s boxes	8	9
Bike racks	7	9

Table 6-16 School B Photos: Rated liked and important

School C

There were a considerable number of photos taken of wall displays and objects at School C during the child-led tours, therefore, the photo rating survey had significantly more photos of displays than at any of the other schools. The significance of this became evident through the photo rating exercise, confirming that **displays** are important for the children, highlighted in Table 6-18. The '**Learning Lodge'**[1] was rated as important by 11 out of 12 children, however, this may have been popular as it was the newest part of the school, being installed during the period when fieldwork was carried out. The **play park** was confirmed as being an important area of the playground, with several photos being amongst the most liked and important photos, and the **reading pod** was also well liked by children. The **medical room** was rated the most important photo, several learning spaces were also rated as being both liked and important, notably the **library, hall and classrooms**. Spaces and items that were ranked as disliked and not important, were limited, but included the bushes and the cleaner's sink (located in one of the small group rooms). The lack of interest for photos relating to both natural environments and technology was also noticeable at School C. The extended list of tabulated findings for School C can be found in Appendix E.

School C Photo Rating Survey: Disliked / Not important			
Disliked	**Number disliked (out of 12)**	**Not important**	**Number not important (out of 12)**
Cleaner's sink	11	Cleaner's sink	11
Bushes	8	Noughts and crosses toy	8
Museum sign	8		

Table 6-17 School C Photos: Rated disliked and not important

[1] The Learning Lodge was a newly installed pre-fabricated classroom located to the rear of the main playground area on the field. This classroom was intended to be used for small group teaching

School C Photo Rating Survey: Liked and Important		
Liked AND important	**Number liked (out of 12)**	**Number important (out of 12)**
External places		
Learning lodge	9	11
Play park 1	12	10
Play park 2	10	10
Play park slide	12	8
Play park bridge	10	8
Reading pod 1	6	8
Rock in play park	10	7
Reading pod 2	8	7
Playground football pitch	8	7
Foundation playground	7	7
Internal places		
Medical room	10	12
Library 2	9	11
Library 1	7	11
Classroom 3	7	10
School hall	9	9
Small group room	8	8
Museum in studio 1	8	8
Classroom 2	6	8
Classroom 1	4	8
Museum in studio 2	8	7
Gems classroom	7	7
Objects		
Bean bag in library	10	10
Integrity award display	10	10
Role of honour display	9	10
PGL holiday display	9	9
School rules 3	9	9
Attendance certificate	9	9
Work on display	9	9
Lunch menu	8	9
Hanging bikes 2	7	9
School rules 2	7	8
Basketball nets	11	7
Flags in school hall	8	7
Hanging bikes 3	7	7
Reading super league	7	7
Duck by pond	7	7

Table 6-18 School C Photos: Rated liked and important

School D

At School D, many of the key outdoor spaces used for different activities are highlighted as places that are both liked and important. This includes typical play areas, like the **multi-use games area** and the **field**, whilst it also includes **outdoor learning spaces**; the pond area, the willow tunnel and the outdoor classroom. For internal spaces, the **classroom** is identified as important as well as the **library** and **hall** as at the other schools. At School D, the **first aid room** was rated important by 11 children and the **Head Teacher's office** was also highlighted as significant. Photos of **smartboards** were deemed important by the children and the '**Friendship Stop**', a place where children can go when they are feeling lonely, was important for many of the children. In addition to those photos rated both 'liked and important', there were several photos rated as important that were not liked by as many children (Table 6-19), notably the **school rules**, **entrance gates**, **corridor learning space** and **admin office**. Interestingly at School D, there was a lack of photos where the children rated them 'disliked and unimportant'. The extended list of tabulated findings for School D can be found in Appendix E.

School D Photo Rating Survey: Important		
Important	**Number liked (out of 11)**	**Number important (out of 11)**
First aid cupboard	5	10
School rules	2	10
Entrance gates	1	10
Corridor learning space	4	9
Admin office	4	9
Staff photo display 2	5	8
Sinks in corridor	2	8
School welcome sign	5	7
Gardening area 2	4	7

Table 6-19 School D Photos: Rated important

School D Photo Rating Survey: Liked and Important		
Liked AND important	**Number liked (out of 11)**	**Number important (out of 11)**
External places		
Foundation playground	8	10
Multi-use games area 3	10	9
Field 2	10	9
Pond area 2	9	9
Multi-use games area 1	9	9
Field 1	10	8
Goals on field	10	8
Pond area 1	9	8
Multi-use games area 2	9	8
Bike shelter	6	7
Outdoor classroom 1	9	6
Willow tunnel 2	8	6
Outdoor classroom	10	5
Willow tunnel 1	9	5
Internal places		
Classroom 1	10	11
First aid room 2	7	11
Hall	7	11
Library 1	8	10
Head teacher's office	8	10
Classroom 3	8	10
Classroom 2	6	10
Library 3	7	9
Canteen	7	9
Library 2	8	8
First aid room 1	6	8
Leos Den	6	6
Objects		
Smartboard in classroom	7	9
Friendship stop	6	9
Smartboard	9	8
Staff photo display 1	6	8
Partner school display	9	7
Reach for the stars display	8	7
Framed artwork 1	8	6
Who is god display	8	6

Table 6-20 School D Photos: Rated liked and important

6.5 Summary and emerging categories

This chapter has presented an overview of the research context followed by a summary of the preliminary findings, including the focus group drawings, the text based scrapbook answers and the findings from the sets of photographic data. By conducting an initial review of the data, tabulating the content in the form of matrices, it formed part of the data familiarisation and filtering process, aiding the first-cycle coding. During the preliminary review, there were recurring topics, from which categories began to emerge. As such, the preliminary findings informed the subsequent, focused, coding processes, resulting in the generation of themes that are discussed in the chapters that follow. However, this chapter has revealed some immediate findings that were evident in the data and are summarised as follows:

- Children generally like their school buildings and are positive when revealing their thoughts about their schools.
- The visual appearance, size of school and use of colour have been identified as characteristics that children relate to when discussing the school buildings.
- Children's initial views on 'good places at school' have been identified. Internal spaces being suggested as good places included: classrooms, school halls and the library, whilst popular external spaces were: play spaces, sports pitches and the importance of the natural environment was highlighted. Quiet spaces were also noted as being important for some children.
- Spaces where children 'feel good or happy' have been revealed and initial insights have been offered into factors that might make them happy in certain spaces. The main space identified was the classroom, because children can be with friends, feel safe and their teachers also make them feel good or happy. Playground and play areas were also highlighted for play, having fun and socialising with friends.
- Good places to learn were identified as the classroom, computers or ICT suite and the library. Some outdoor spaces have also been suggested as good places to learn. Children's initial views on what makes a space good to learn in, included: environmental conditions, having the necessary equipment, the teachers and the ability to have fun. Some of the best alternative spaces in

which to learn were also identified, including school halls, libraries, outdoor spaces and smaller group spaces.

- Insights into children's free time at school revealed their feelings about their time spent in outdoor spaces. In addition to playing and having fun, children like to feel free, to get some fresh air, to chat, to have space to run around in and have a place to relax.
- Photographic data has shown some of the key elements that remain important to the children at school, including spaces and places, displays, facilities, technology, objects, signage and people. There is a significant emphasis on the external spaces and the natural environment within the photographs taken by children. The most important internal spaces, for the children, have been identified as the hall, library and classroom. Additionally, at School A and B, waiting areas or entrances were found to be important whilst at School D the Head Teacher's office was also recognised. The most important external spaces included: the playground, play parks, sports pitches and the field, whilst there was raised importance for allotments, gardening areas and places to nurture wildlife. Places that provide quiet spaces for children to sit and chat are also important.
- Physical elements in the school environment at School B were popular whilst at School C the importance of the displays around school was significant.
- Technology seems important to children as smartboards, computers and laptops were frequently being photographed. Although photographs of technology were least discussed during the photo reviews of the child-led tours, they did, however, feature in children's scrapbooks and drawings often.
- Some facilities are also important for children. The most notable being bicycle storage, in the form of shelters or racks.
- Specific objects that were deemed important were related to personal achievements, pets at school and signage, including welcome signs and school branding.
- Specific people were important to some children, including teachers, other staff members, other children and family members (eg. siblings).

Reviewing the initial findings and the emergent topics, in conjunction with the initial draft codebooks that arose from the first-cycle coding process, a list of provisional categories developed:

- **Physical characteristics**
- **Environmental characteristics**
- **Experiences and feelings**
- **Important spaces and places**

However, these categories required further interrogation through coding the complete set of data. This analysis process, as described in Section 5.7, ultimately led to the development of the major themes within the data. Chapters 7, 8 and 9 that follow, present and discuss the thematic findings from the data, addressing themes that relate to: 'Holistic Perceptions of School Environments' and 'Desirable Characteristics at School' and 'The External School Environment' respectively.

Chapter 7

Holistic perceptions of school environments

"I like the shape, of it...you don't see a school like this every day you go past one!"

James, School D, Scrapbook interview

7 Holistic perceptions of school environments

7.1 Introduction

The aim of the following three chapters, is to present the findings from the coding process and thematic analysis carried out on the data collected. Findings presented in this chapter explore children's holistic perceptions of the school environment. The chapter begins with an overview of the inter-related themes to be discussed. The key themes which underpin the discussion include: how the school appears to be (to children), the significance of the front of the school, the shape of the school, the effects of colours and materials and feeling safe and secure. These themes were common across all four case study schools as the data were analysed collectively. Thus, a summative analysis is appropriate to discuss these findings. Findings are presented using direct quotations from the discussions with the children, giving direct voice to the participants of the study. Allowing children to freely express their views (UNICEF, 1989) has been integral to the research and the importance of children's voices in research has been emphasised (Clark et al., 2005, Christensen and James, 2017) . All names used for presentation of quotes are for illustration purposes only as children have been anonymised in the study. To aid the narrative presented, the visual context becomes important, thus, where relevant to the text, references to the children's photographs and drawings are also made throughout this chapter.

7.2 Thematic overview

Due to the complex nature of adopting a grounded thematic approach to data analysis, the list of themes which emerged provided a multi-layered web of inter-connected concepts. Figure 7-1 is a coding hierarchy diagram, generated from NVivo analysis software. This indicates the coding frequency for the major codes which led to the development of the themes that are discussed in this chapter (refer to Appendix H for additional diagrams). Figure 7-2 outlines the key themes and associated sub-themes that form the discussion in this chapter. Figure 7-3 presents the mapped relationships between the themes.

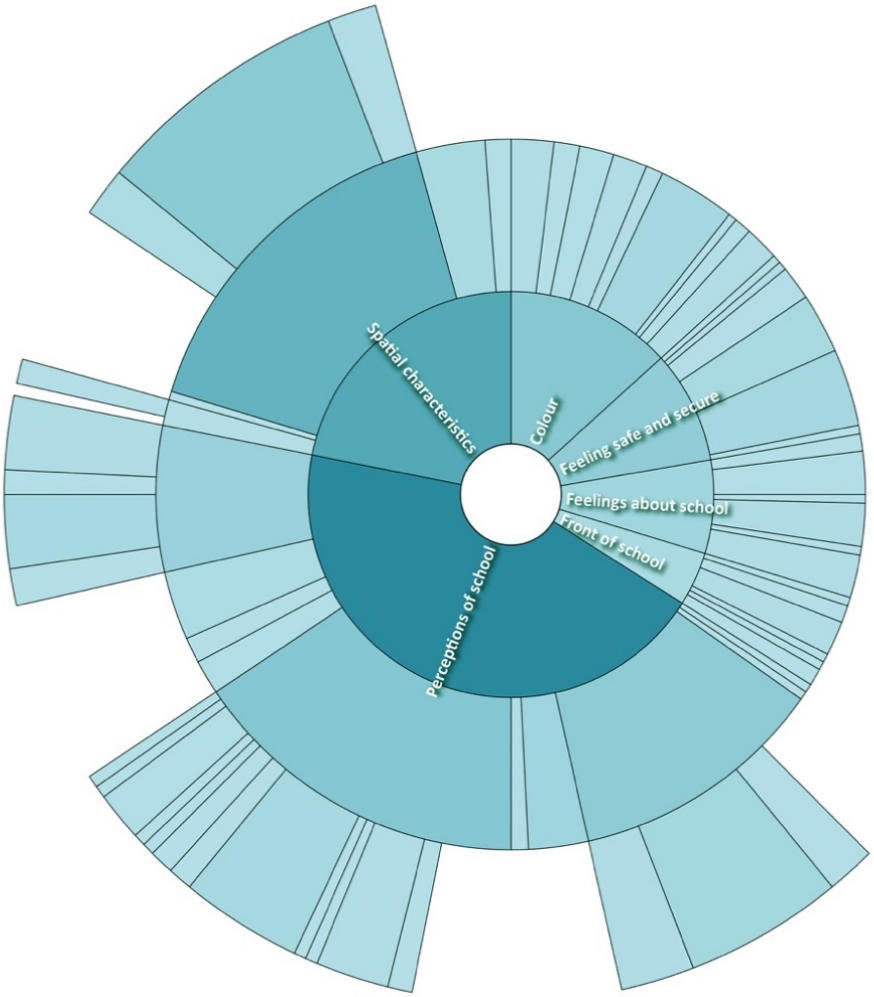


Figure 7-1 Coding hierarchy rose relating to the children's perceptions about school

This rose shows a selection of the codes developed during the data analysis process that were related to children's perceptions about school and led to the final set of themes identified in Figure 7-2. The variation in colour tone represents the amount of coding references and the segments are sized by number of sources that have been coded

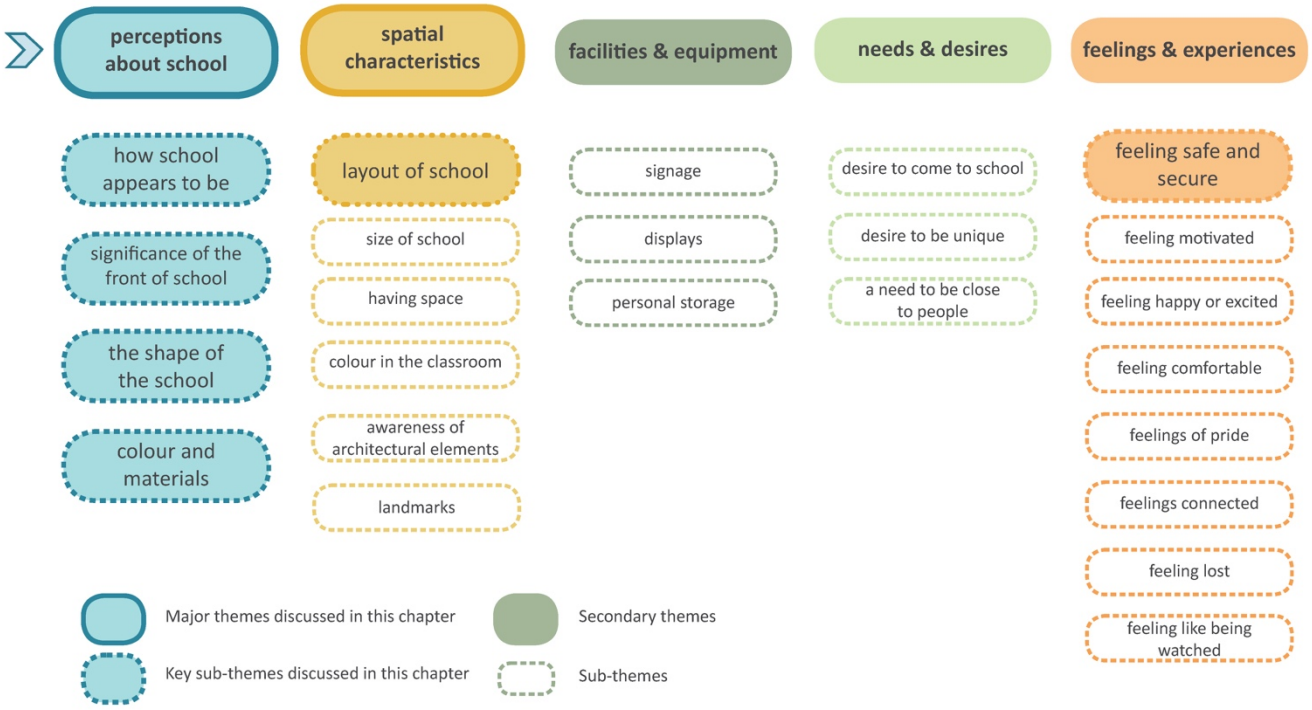


Figure 7-2 Summary of themes relating to perceptions about school discussed in this chapter

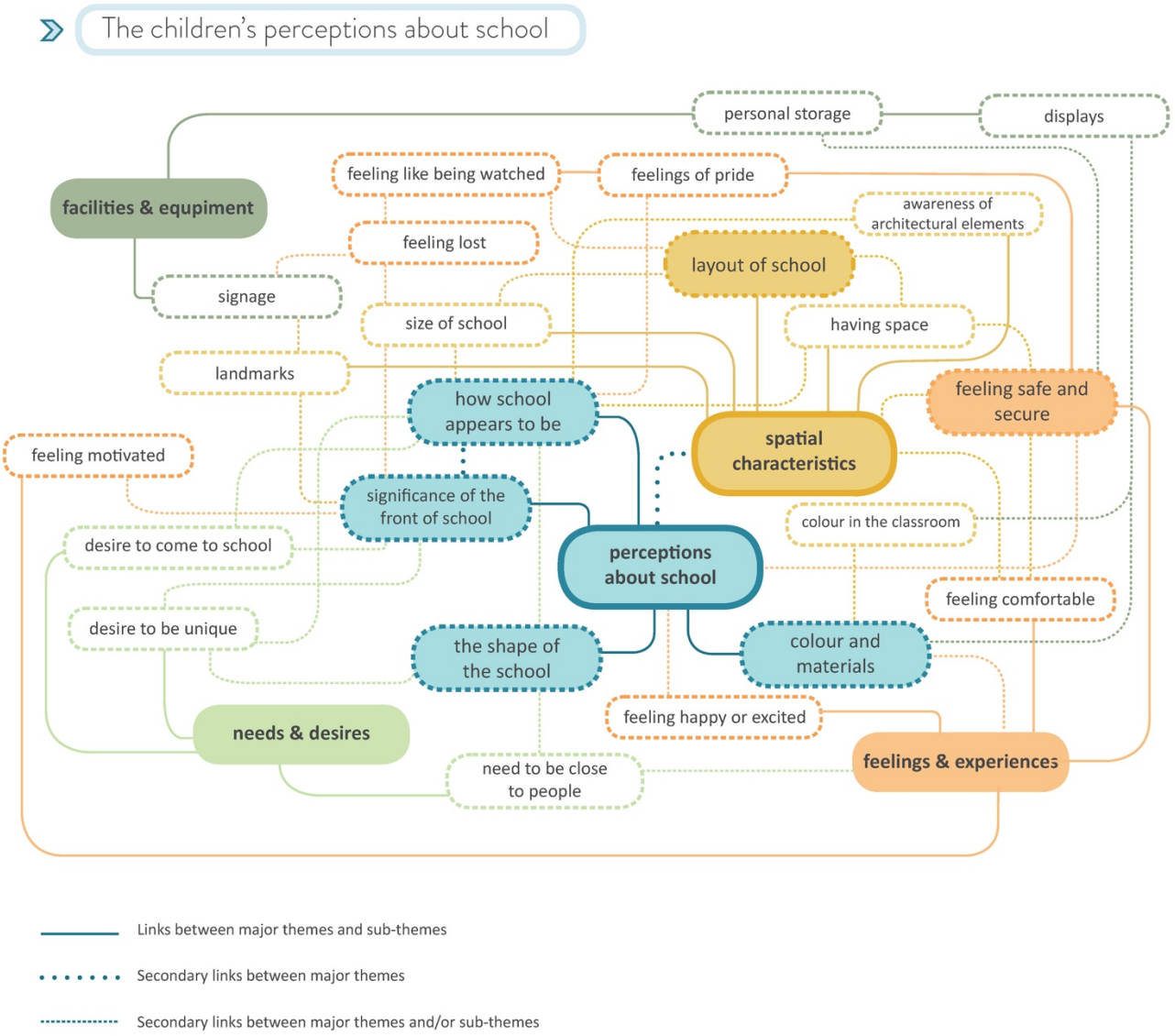


Figure 7-3 Summary of the inter-connected themes that emerged from data analysis, relating to the children's perceptions about school

Note: The diagram shows the complex web of relationships between themes. Connections indicated are not exhaustive as many of the themes are connected to multiple factors

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7.3 Building the children's picture of 'school'

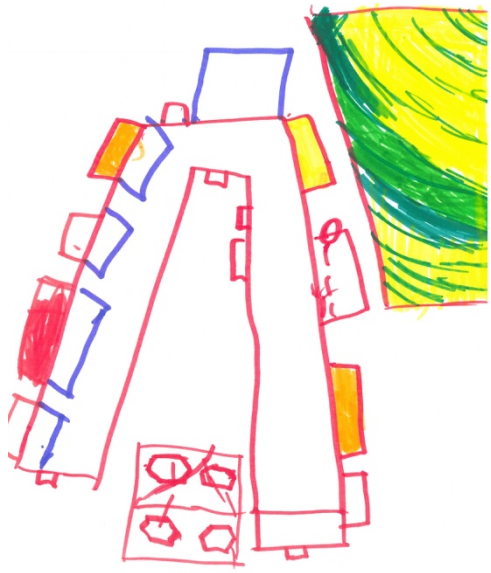

Figure 7-4 Drawing of school, Josie, School A

Figure 7-5 Drawing of school, Evie, School B

It has been highlighted in Section 6.3.1 that children across all four schools tended to speak positively about their school with 45 of 54 children (83%) confirming that they liked their school building. A key theme which emerged from the data was concerned with **the appearance of the school** being important for children. There were various ways in which children expressed their thoughts about 'how the school looks'; for example, there were references to the school looking "*good*", "*posh*", "*pretty*", "*welcoming*" and "*safe*". The way in which children perceive their school environment has been found to be related to important educational outcomes, such as engagement and academic self-esteem (Eato and Lerner, 1981, Edgerton et al., 2010, Edgerton et al., 2011), therefore, the fact that children tended to perceive their schools in a positive way is encouraging. Children elaborated on the impact of how the school looks, commenting that if the school looks "*good*", it might make other children want to come to their school, with some children also suggesting it can affect how they feel. For example, when asked if they thought it was important for their school to look 'good', a child at School B responded:

"Yes, because that will make people want to come to this school more. And it will make our school look good and nice…I think it makes you feel a bit happier because it's really bright and colourful, so it's not dark and miserable"

Amelia, School B, Phase 3 Scrapbook interview

Children's attitudes towards school have also been suggested to effect desire to come to school by Rudd et al. (2008), in a study on a new BSF school with older children. This study reports that moving to a new school building can have a positive impact on a range of attitudes (Edgerton et al., 2011). The impact of a school building, or elements of it, being 'new' was also apparent in children's responses, particularly at School A. The children at School A were in their first academic year at the new school and children explicitly referred to the fact that the school was "*new*" or "*modern*". Evident across all schools, this notion of 'newness' was discussed in relation to the whole school, new classrooms, other parts of school and to technology. At School A, children tended to draw comparisons to the old school in terms of the appearance, the new spaces, the technology facilities available, whilst there were also references to materiality. For example, Angela at School A indicated that the school was "*more cleaner and newer than the old school*":

"Well the old school was really old, and, and some of the paint was like falling to pieces and the bricks were, looked really old - not like other schools today - like it's nice and fresh. And this school is the newest school in [the town]…I say it's really well done, it's not old, in fact it was like going to a new school when I first entered it, I was so excited"

Angela, School A

Phase 3 Scrapbook interview

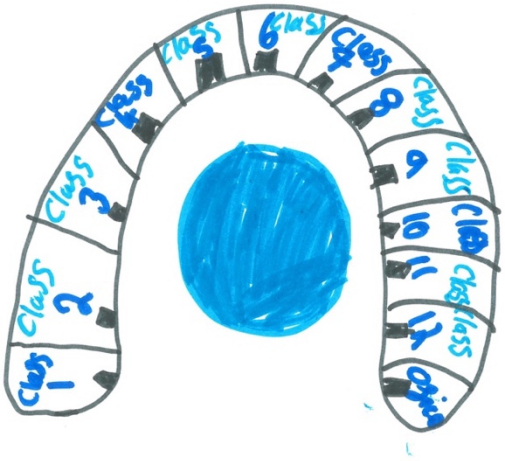

Figure 7-6 Drawing of school, Katie, School C

Figure 7-7 Drawing of school, Lillian, School D

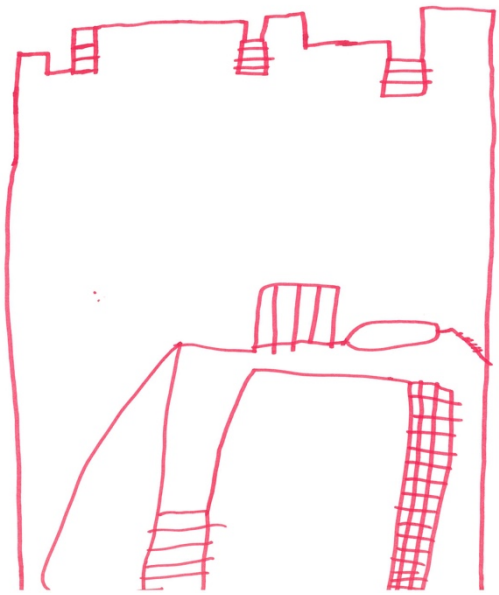

Figure 7-8 Drawing and description of school gates by Riley, School C

"Researcher: Why did you draw the school gates?

Alisha: Because that's how you draw the school

Riley: As well, it says draw a picture of your school. The school gates is like representing the school. Because as soon as you walk through there, and like there's no turning back"

Riley and Alisha, School C,

Phase 3 Scrapbook interview

As children discussed their 'new' facilitites with pride, it suggests that the school, or parts of the school, feeling new or modern can have a positive effect on children's attitudes towards the school, supporting evidence found by Rudd et al. (2008). However, as this was most evident at School A, this could be due to a 'halo effect' (Thorndike, 1920), where positive perceptions, due to the school building being 'new', can have an impact on children's overall perceptions of the school (McEwen et al., 2011). Under the main theme of 'perceptions about school', additional sub-themes closely related to the appearance of the school revealed that the **front of the school building**, the **shape of the school,** the **size and layout** and **colours and materials** are also significant in children's perceptions of the school.

For the children, the **front of the school** building, or the school gates, were identified as an important part of the school and it was seen by the children as being representative of the whole school. This evolved as a theme across all four schools, the front of school or the school gates were photographed on the tours, also featuring in many of the children's drawings and discussions. This is illustrated by an example, Figure 7-8, at School C. Riley was asked why he had drawn the school gates in the scrapbook interview and both children present agreed that that's how you draw 'the school' (see quote opposite). The importance of the school gates was also identified in a study by Ghaziani (2012 p.135), involving 11-12 year olds, where the exterior of the school building was rated

as quite important, and more specifically, this included "a well-designed gate for the building".

There was also evidence to suggest that the school gates and the front of the school were thought of as a focal point and for some children, it was proposed that the front of school was important because it was where they enter the school every day. In this case, it was seen to be attractive, perhaps even enticing them to come to school, as Heather mentioned when discussing her photo, Figure 7-9, chosen for the scrapbook:

"The front of school. It's important because it's where we walk to school in the morning and it's got bright colours and everything like that…'cus it makes me want to come to school every day"

Heather, School B,

Phase 3 Focus group

The perception of how the school appears from the front or entrance seemed to enable children to identify with the school as a complete picture; a landmark. Landmarks (and boundaries) function as environmental cues (Weinstein and David, 1987, Steg et al., 2012) which aid children in constructing a comprehensible picture of the spatial environment (Weinstein and David, 1987). Furthermore, this aligns with additional findings by Ghaziani (2012), where the exterior of the building being colourful and the fact that the building can act as a landmark (Ghaziani, 2008) were also found to be important for children. It also suggests that the visual appearance of the front of the school could be related to how children feel about coming to

Figure 7-9 Photo of the front of school by Heather at School B

Figure 7-10 Photo of the front of school C by Jasper at School C

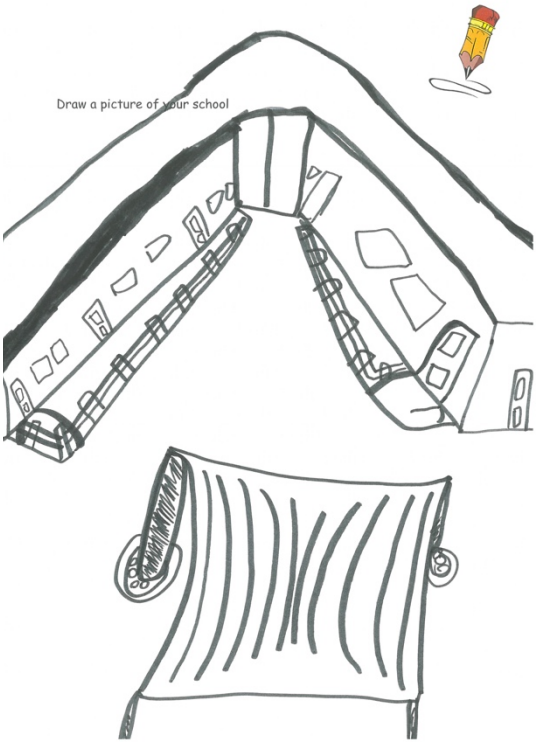

Figure 7-11 Drawing and description of the school by Angela, School A

"I think to have it look like something, say a "V", because it looks like a V. And it just shows that it's not just like a random blob, it's some shape…It could have been any shape, it could have been an A, could have been a B…"

Angela, School A,
Phase 3 Scrapbook interview

school. Visual qualities of the physical environment are rarely focused on within the literature on school environments, however, the aesthetics of education spaces have been argued as being important for children's experiences (Rinaldi, 2006, Dudek, 2007).

Attractiveness of the exterior of the building was thought to be related to children's positive perceptions of the physical school environment by Edgerton et al. (2011), which is believed to affect behaviours, engagement with the environment and feelings about security (ibid), whilst unattractive schools have also been found to impact on truancy levels (Hallam, 1996).

The **shape of the school** was found to be another recurring theme across the research data related to the perceived appearance of the school building. This echoes findings from the original '*The School I'd Like'* study (Blishen, 1969), where there was a consensus that children desired a school that was a shape other than a square (Malcolm et al., 2011). The shape of the school being unusual or unique was commonly implied by children at all case study schools. However, this theme emerged most significantly at Schools A and D, perhaps where the shape of the school is more visually obvious. At School A, children frequently referred to the "*V*" shape when describing their school building, Figure 7-11, also comparing the school to objects; for example, a pair of "trousers". At School D, the school being "*round*" or "*hexagonal*" in shape was referred to by the children when describing their school building; for example, Figure 7-12. The

significance of this seemed to be that the school was visually relatable to 'something' or that it has an identity. It was clear that there was a strong desire, for the children's school to be different or better than other schools in their area and for it to 'stand out', become a reference point for children's orientation (Tanner, 2000) whilst offering a sense of a school's identity:

"I like the shape, of it…'cus like, you don't see a school like this every day you go past one!"

James, School D,
Phase 3 Scrapbook interview

"It's just like, it's like the shape. 'Cus when you go past some schools, they are not just round, like an octagon, they are more like rectangular, squares and all that"

Graeme, School D,
Phase 3 Scrapbook interview

Although not as common, there were additional references to the shape of the school or elements of the school at both Schools B and C, comparing the form to known objects, with references to School B being shaped like a "*50p coin*" and the School C foundation unit being likened to a "*strawberry*". Comparisons were made by children between the school and other building typologies. These comparisons were wide ranging including school looking like a "*luxury mansion*", "*a museum*" and a "*New York building*":

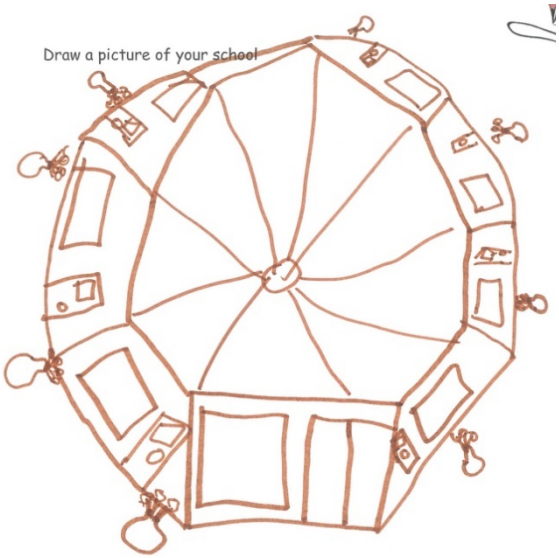

Figure 7-12 Drawing of school by Tanya, School D

"It's a different shape to most other schools…Because most schools are either not that big, they could be maybe the same shape but they are either not that big or they are just a different shape. And I like the way that ours is a hexagon"

Tanya, School D,
Phase 3 Scrapbook interview

> "*It looks like a museum because it's big, and bulging, and in some of the rooms, and some outside parts, it looks a bit plain like a museum…well, in most, in not that many parts there's not that much colour, like outside. So that part is like a museum because it's got like no colour…if you are new to this school and you just have to walk into there to have a look at the building, you will think it's a museum and not a school"*
>
> *Lewis, School C,*
> *Phase 3 Scrapbook interview*

The fact that children are striving to give their school a label, a form, a typology, further suggests that they see their school as a symbolic place (Loxley et al., 2011); a landmark building which can heighten the sense of the school's place in the community (Tanner, 2000). Moreover, children tended to express a sense of pride in conversations about their school (Sorrell and Sorrell, 2005, Ghaziani, 2008, Burke and Grosvenor, 2015) and by labelling it, in the ways the examples have shown, it suggests that they see the physical entity of the building as very much a part of the school as a meaningful whole (Loxley et al., 2011).

The **school layout** and **size of school** emerged as sub-themes under the broader theme of spatial characteristics. When considering children's perceptions of the 'whole school' environment, it was revealed that the **size of school** had an impact on their positive perceptions of the school.

Many children across the schools commented on the school building in terms of its overall size. There was a plethora of terms used to describe the school as being "*large*" whilst there were instances where the size of the school was discussed in relation to the fact it might be modern, or by comparing to an old or previous school; for example, Belle at School D wrote in her scrapbook "*I like it because it is modern and much bigger than my old school",* elaborating in the scrapbook interview, she revealed this was due to its shape and size:

"Belle: I like it because it's different to lots of other schools…

Researcher: And how do you think it's different?

Belle: …like because of the shape…and how like, like it's really big as well"

Belle, School D, Scrapbook interview

Comments such as these further reinforce the finding that the children yearn for their school to be unique. Children identify with their school being "*really big*" as a positive quality. This implies that the children see their school as a prominent part of the built environment and that the school has a definite 'status' in comparison to other schools. Nevertheless, the perceived 'size' of the school may not necessarily be solely based on its physical size, it could also pertain to the occupancy of the school. Research on the size of schools tends to be focused on social density and relationships to school effectiveness and educational achievement and behaviour (Wasley et al., 2000, Stevenson, 2006, DCU, 2007, Gershenson and Langbein, 2015). Though, there is a lack of consensus on what the optimal school size should be (DCU, 2007) and there are multiple educational factors that school size can affect (ibid). The findings relating to school size in this thesis seemed to relate to the physical size of the building, as it seems the children prefer the school to appear larger than others, given the context of their conversations. However, it is noted that questions remain over whether this relates to perceptions of social or spatial density, or both. Nonetheless, children strive for their school to be distinct, some children also expressed a desire to attract more children to come to their school, relating to social density. Lewis, at School C, discussed in more detail why he thinks having big school is "*good*", during the scrapbook interview:

"It's great because you can fit a lot of people in this building, and we have got over 400 people in this whole building…It's good because, you have got more people to learn and more people to get an education…it's sometimes important to have a big place to learn if you have got loads of people, at that place. Because you need some space…"

Lewis, School C,

Scrapbook interview

The size of the school, in terms of social density, can be linked to the theme of '**having space'** at school. Children expressed a need for having enough space as they spoke of being "*cramped*" and "*squashed*" in classrooms, the hall and even the playground. The need for 'having space' is discussed in Chapter 8. Moreover, findings relating to the **size of the school** support the notion that having a 'large' school, is perhaps related to the relative status and identity of the school.

In addition to considering the overall size of the school, children commented on **layout of the school** or locations of specific spaces which had implications for children's navigation within the school buildings, most notably at School C. An issue raised at School C; was, in the children's words: "*you can get lost in it*". However, there was a lack of consensus between children, as evidenced by both positive and negative experiences described:

> *"I mean it's really big, so there's a lot of things to do and you won't get bored. And if you get lost, it makes it really fun, because to try and use what you have learnt to try and get back to your class or where you are trying to go. Because there are a lot of places in school and it's hard to remember where they all are"*
>
> *Jamie, School C,*
>
> *Phase 3 Scrapbook interview*

The challenge of navigating through School C was relished by some children, suggesting that discovering the space could be "*fun*". Conversely, some children saw the large school and its layout confusing:

> *"The school's big so some people can get lost, and if you get lost, sometimes you need to ask for navigations. But if no one will come, ask you, you have got to walk around the school to know where everything is"*
>
> *Lewis, School C,*
>
> *Phase 3 Scrapbook interview*

Disorientation leads to feelings of distress and could leave children feeling frustrated, which in turn can lead to negative psychological (and physical) effects (Carpman and

Grant, 2002). Dudek (2007) draws on Edward T. Hall's anthropological view of space, where he believes that:

> "Man's knowledge and control of space…being 'orientated' is a fundamental characteristic of… social development. Without this sense of control of one's environment, to be disorientated in space, is the distinction between survival and sanity" (Dudek, 2007 p.6)

This could be considered for the scenario of the child in a school building. The ease of wayfinding can result in both positive and negative experiences for children and thus their perceptions of the school environment may be affected by such experiences.

Similarly, navigating the school building was raised at School D. Referring to the circular layout of the school, Tom suggested in his scrapbook that he liked the school layout because it was "*not hard to get around*", also suggesting that in his opinion, the layout made sense:

> *"…well it kind of makes sense having the hall in the middle and the classes around because it wouldn't make sense if the hall was like on one of the sides and then the classroom was in the middle. It wouldn't be that great"*
>
> *Tom, School D,*
>
> *Phase 3 Scrapbook interview*

Furthermore, when Tom was interviewed, he elaborated, alluding to the ease of navigating the around school building:

> *"Well, it's not like most schools where there's like all these different doors and everything going to different places, it's not like [local school] where you get lost all the time. It's round, so if you are lost, like near the entrance, you can just go round to where you need to go."*
>
> *Tom, School D,*
>
> *Phase 3 Scrapbook interview*

It is interesting to note that the layout at School D, is reminiscent of some of the first board schools, based on the form of an eighteenth century house, with an assembly hall at the heart and classrooms clearly ordered around the edge (Dudek, 2007 p.10). The findings relating to children's navigation of their school building implies that children are very aware of the layout of the school and it could prove to have an impact on their experiences when circulating at school, thus wayfinding is important for children, which was also reported by Ghaziani (2012 p.136). Tom, at School D, has alluded to the idea that the physical form and layout of the space can potentially ensure the ease of wayfinding for a child. However, it should be noted that the children finding navigation difficult at School C may have been negatively affected by many other inter-related factors, including (lack of) architectural differentiation between spaces; (lack of) landmarks, including artwork; (lack of) signage and maps; or (poor) lighting, both artificial and natural (Carpman and Grant, 2002).

7.4 What defines a 'colourful school'?

Colour and materiality were identified as a further theme where children's perceptions of the school environment were related to physical appearance. This theme is closely connected to several other themes within the data, including **how school appears to be, significance of the front of school, feeling happy or excited and feeling comfortable**. As such, the findings associated with this theme will be discussed together here to further build the picture of how the children holistically perceive their schools.

Figure 7-13 Photo of a hub space at School B by George at School B

The notion of a **'colourful' school**, regarding the whole school generally, as a colourful entity, was raised as an initial finding in Chapter 6. Children frequently referred to colour at school, discussing the whole school, specific use of colour in spaces and the effects of colour on how they feel at school, as findings from previous studies have suggested (Sorrell and Sorrell, 2005, Clark, 2010, Ghaziani, 2010, Burke and Grosvenor, 2015). It was noted during the observation that School B and C seemed to offer the most colourful stimuli, both internally and externally, through the use of materials and finishes, as well as wall displays and artwork, whereas Schools A and D offered a more neutral palette with fewer displays. This was likewise evident from the children's responses and discussions about colour. For example, several children at School B commented in a positive way around the topic of the school being colourful in their scrapbooks:

Figure 7-14 Photo of the school exterior by Anna at School A

"Researcher: What makes it a colourful school?

Emma: Because of the displays in the classrooms…and, the shiny things on the outside of the school [cladding] and in the dinner hall with the carpet, sort of.

Researcher: The carpet? [Note: there is no carpet in the school hall]

Emma: Well it actually isn't on the floor, it's yeah it's like those [points to coloured acoustic wall panelling]"

Emma, School B,

Phase 3 Scrapbook interview

Figure 7-15 Photo of the coloured panels in the hall by Heather at School B

Comments such as these were most common at School B and children referred to both the interior and exterior environment when describing the 'colourful school'. However, there was also reference to the use of colour at the other schools. As noted in Chapter 6, the topic of colour was raised by children when suggesting reasons as to why they might like their school or indeed, the classroom; it was evident that the use of colour in the environment attracted the children's attention, as also reported by Camgöz et al. (2004). When people see colours it triggers reactions in the mind, however, similarities from person to person (or child to child) are questionable (Higgins et al., 2005b). Many of the children's comments regarding colour in the schools were found to be positive reactions, evoking positive feelings (Cubukcu and Kahraman, 2008) however, there were some children who expressed alternative preferences, examples of which will be described later in this section.

Figure 7-16 Photo of the hall at School C taken by Jennifer

Children made the link between the school being colourful and the fact that it makes them **feel happy,** whilst it has also been argued that colour can affect mood, clarity of thought and energy levels (Higgins et al., 2005b p.20). The desire for a happy and welcoming school was also found by Ghaziani (2010 pp.22-23), however, she expresses caution that this may not be solely related to the physical environment. Nevertheless, children were given the opportunity to elaborate on their comments in the scrapbook interviews and Nathaniel, at School B, suggests that looking at the colours makes him feel happy: (Figures 7-17 and 7-18):

Figure 7-17 Drawing of the front of School B, by Nathaniel

"Ok, well this is the front [of school], where the entrance is, and then on the side of the wall they have like these stained glass windows but you can't really see through them properly…They look cool, they are cool… because it's big and it's very colourful…it makes you feel happy when sometimes you look at the colours"

Nathaniel, School B,
Phase 3 Scrapbook interview

Figure 7-18 Coloured windows at School B entrance

And returning to Emma, who described the "*colourful school*", elaborating on this, she implied it affects her mood and could also be linked to motivation to come to school:

'Cus it doesn't look really dull every single day. And especially when you are feeling sad and don't want to come to school"

Emma, School B,
Phase 3 Scrapbook interview

Children discussed specific **physical elements** relating to colour; for example, the exterior or interior cladding materials or the wall displays in classrooms and corridor spaces. Comments referring to the school being colourful on the **exterior** were mainly at School B, as one child pointed out, (again, referring specifically to the 'front of school') during the child-led tour, Figure 7-19:

Figure 7-19 Photo of the front of school at School B taken by Layla

"It's very eye-catching [front of school], because it's got lots of bright panels around it, at the top…"

Layla, School B,
Phase 2 Child-led tour

This reveals that the front of school at School B attracted children's attention using colour and children had expressed a desire to come to school as a reaction to the exterior appearance and in this instance, the appearance of the front of school. Likewise, Camgöz et al. (2004) and Cubukcu and Kahraman (2008) have reported similar findings, respectively. Furthermore, at School A, Lucas had mentioned in his scrapbook that he liked the fact there were lots of colours both inside and outside the building and the interview revealed that the colours he was referring to were related to the external façade of the school building; the "*cream and brown",* (Figure 7-20). It is important to note that these colours were mentioned by the child in the scrapbook, rather than during a child-led tour (when in context). This highlights that perhaps

Figure 7-20 The "cream and brown" exterior of School A, photo taken by Josie

"Lucas: Like along here [referring to the outside of school], it's like cream and brown and stuff along here, it's like cream…
Josie: It's brown on the outside
Lucas: Yeah. There's a mix of colours around the school"

Lucas and Josie, School A
Phase 3 Scrapbook interview

colours do not necessarily have to be 'bright' in order to obtain children's attention, and for the colour to be retained in the child's mind. Contrast in colours and texture of the façade materials in this scenario, could have been a factor which contributed to children noting the 'colours' at School A. Indeed, the influence of texture on a building exterior can be greater within the urban setting, as opposed to rural areas, as the viewing distance is much shorter (García et al., 2006). The façade of School A surrounds the children's play areas so they are within touching distance from it. It was noted during the researcher observation that the children would literally touch the walls, when using it as a 'base' in their games during playtimes. Some children demonstrated an awareness of **materiality,** at other schools, referencing both exterior elements and interior spaces. Children made general comments about the construction materials used externally for buildings, with references to brick, timber, concrete or render[1] in discussions about the school building. For example, at School C, the old part of the school being made from bricks was highlighted as was the timber cladding of the new learning lodge classroom. For example, Alisha at School C, explained why she liked her school building in her scrapbook, Figure 7-21.

Figure 7-21 Scrapbook drawing of the school by Alisha at School C

"The school is a building made of bricks and a bit colourful. Also very old"

Alisha, School C

Scrapbook in focus group

[1] Where the external render was a topic of conversation, children struggled with a term to describe this, asking the researcher what the material was called.

Whereas at School B, the external cladding panels were a focus of some of the children's photos, which has previously been mentioned. This is significant as it suggests that children were aware of materials used on building exteriors. Juxtaposition of materials can arouse associations, influence how places are used and become place identification tools (Hertzberger, 2008 p.84). Moreover, materiality was not only referred to in terms of the school building itself, it was also considered by children in external spaces or objects in the school grounds. For example, at School A, there is an outdoor classroom structure, located on the grass area by the allotments, constructed from timber. This "*hut*" was chosen by Leah, as one of her favourite places at school, drawing it in her scrapbook because of how it looks, also suggesting that the hut is "*nice to look at*" and that it is a "*nice view*" due to the "*woody-brown*" appearance; Figure 7-22. Dutt (2012) found that natural materials, such as wood, can provoke reactions in students, suggesting that appearance of the material can have underlying values (Day and Midbjer, 2007). As such, Dutt (2012) proposes that wood is tangible and warming which can provide welcoming and comforting feelings.

Figure 7-22 Photo of the hut at School A taken by Leah

"Leah: The hut. It's really…I've never really been in it, well I have, I sat down in it but no one really has…

Researcher: But it's one of your favourite places at school?

Leah: Yeah, Because it looks…woody. Woody-Brown."

Leah, School A,
Phase 3 Scrapbook interview

As has been noted, at School B, the reflective coloured cladding to the external façade appeared to contribute to children's feelings that it was a "*colourful school*". This can be seen not only from children's photos but also from some of the children's drawings of the school building in

their scrapbooks, Figure 7-23. During the review of the photos, Emma suggested that the "*shiny patterns*" make the school look nice, see Figure 7-24. These 'shiny patterns' were given different names, including the term "*reflectors*", as can be seen in the quotes (opposite) from the children. Serena explained her comment in the scrapbook about the school being colourful:

"'Cus like, if you look outside the school, there's, well it's mostly turquoise but then, it's like when the sun reflects on it, it's like different colours. Like, lighter cream and purple and blue, it's really nice… Yeah, it's nice and reflective sometimes…over there, there's purple, green, red"

Serena, School B,
Phase 3 Scrapbook Interview

Moreover, colourfulness was commonly discussed in relation to the **interior environment**, with children frequently referring to wall displays, as also found by Ghaziani (2010). Wall displays are extensively and elaborately used in UK primary schools (Alexander, 2001). Displays were most commonly discussed at School C, where most wall space in both classrooms and circulation areas had wall displays, in the form of children's work, informational display and learning aids. Similarly to studies by Ghaziani (2010) and Clark (2010), children's own work or the work of friends seemed to have significance for the children whilst Maxwell (2000) proposes that this makes the school welcoming for children. Whereas, at School A, there was great enthusiasm for the large

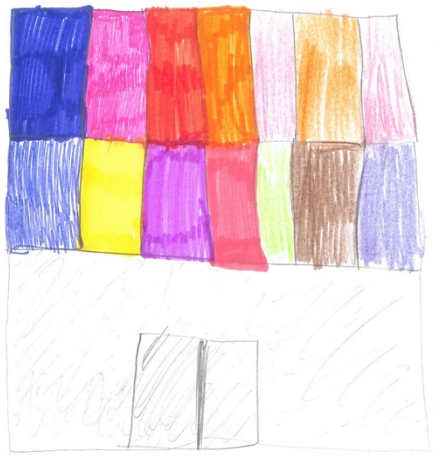

Figure 7-23 Drawing of school, Ameila at School B

"A picture of the shiny patterns at the top of the school. It makes our school look really nice and blue is our school colour"

Emma, School B,
Phase 2 Child-led tour

You get like reflectors on the top of it and it shines down and there's lots of pretty plants and trees…"

Ella, School B,
Phase 3 Scrapbook interview

Figure 7-24 Shiny patterns and reflectors at School B, photo by Amelia

wall graphics applied in some of the circulation spaces. In addition to providing the children with facts, these were described as "*really funny for the younger children to look at*" and "*entertaining when you are reading*", examples in Figure 7-25 and 7-26. It has been argued that displays have a positive effect on children in the school environment (Maxwell, 2000, Killeen et al., 2003). Whereas displays of student work tends to instil a sense of pride and achievement (Maxwell, 2000), the wall graphics at School A were being used both decoratively and as a passive learning aid, whilst additionally they appeared to positively affect children's feelings and mood.

Figure 7-25 Wall graphics at School A, taken by Lucas

"Josie: But then inside is very colourful

Lucas: Yeah. And there's lots of different pictures that are like in the school, the graphics and stuff"

Lucas and Josie, School A,

Phase 3 Scrapbook interview

In the built environment, colour can both positively and negatively affect emotions through pleasure or distress respectively (Cubukcu and Kahraman, 2008) and has been highlighted by Burke and Grosvenor (2015) as featuring prominently in children's thoughts about their school building. This became apparent in the mixed feelings about colour, from the children's perspective, as the use of colour on the interior walls in some of the schools became a topic for debate, as it was seen in both positive and negative lights by children. The use of bright colours on walls or coloured elements, was linked to children feeling happy, whilst others felt it was a distraction. References can be drawn again from School B, where the use of colour was most frequently discussed. Internally, the coloured acoustic panelling used in many of the interior spaces was highlighted in photos taken on the

Figure 7-26 Wall graphics at School A taken by Kieran

child-led tours as being both a liked and disliked part of the classroom. Examples of this are shown in Figure 7-27 and 7-28, taken during the child-led tours.

The conflicting views from the children were most notable regarding the use of colour in classrooms, with some children finding it perhaps over-powering; for example, Austin commented that it makes him feel "*dizzy*", see Figure 7-28, suggesting that the colours were negatively impacting on him. Whereas other children discussed the way colour in the classroom can provide a certain aura; for example, Serena commented in her scrapbook, that her classroom walls could be improved by painting them white because "*it's better than yellow*", further elaborating that white walls "*looks more professional*". This indicates that some children would prefer more limited use of colour. Similarly, the Reggio Emilia approach suggests that the approach to colour in learning environments should be more subtle utilising natural shades and materials and (Dudek, 2007 pp.98-99) argues classrooms should have limited distractions.

Conversely, Mahnke (1996) suggests that warm bright colours should be used in primary schools. Furthermore, Engelbrecht (2003) believes that humans undergo a basic biological reaction when viewing colour and notes "the amazing power of colour on humans and its ability to enhance our experience of the learning environment" (Engelbrecht, 2003 p.2). The overall findings relating to colour, in this thesis, reveal that

Figure 7-27 Coloured acoustic panels in hall at School B, taken by Ella

I like the coloured boards because they are nice, it looks lovely in the PE hall"

Ella, School B,

Phase 2 Child-led tour

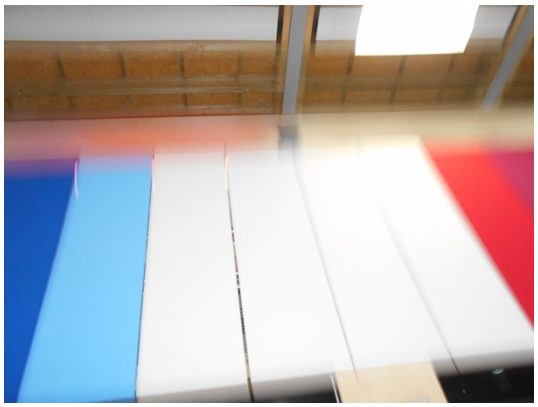

Figure 7-28 Coloured acoustic panels in hub spaces at School B, taken by Austin

"I don't really like these because it makes me feel dizzy"

Austin, School B,

Phase 2 Child-led tour

children generally respond very positively regarding colour in their school environment, however, it must be taken into consideration that this is not the case for all children and their preferences can differ. The effects of colour on reactions between both children and adults and between different genders (Read et al., 1999, Rosenstein, 1985) can be hugely variable (Higgins et al., 2005b p.20). As colour preferences differ, this can be important within the different types of spaces at school; colour may be desirable in some areas whilst not critical in others.

Nonetheless, colour was referred to in connection to identification of space. For example, at School C, the classroom for each year group has a different colour paint on the wall and this was raised by Lewis as being helpful for identification:

"Well in the classroom, we've all got our own colours in our class. You have got green, yellow, blue…'Cus if we [each class year] have got our different colours, then, then we should know which year we are in. But if you have all got the same colours, then it can confuse you…"

Lewis, School C,
Phase 3 Scrapbook interview

This reveals that colour used on internal walls within the school environments can enable children to identify with a specific classroom, or indeed other spaces at school. At School B, the children spoke of "*The Green Room*"; a space where children could go as a reward for good behaviour, where they can play computer games and likewise, at School C, children referred to the "*Rainbow Room*". The use of colour as an identifier allows children to give spaces a label, similarly to the discussion earlier in this chapter, regarding the children's desire for a school identity, spaces within the school can also form their own identity.

Considering the theme of **colour and materials**, there are some important conclusions that can be made relating to children's perceptions of their environment. Firstly, similar to findings from previous studies, children were very aware of colour and materiality within the context of the school, with respect to both the interior environment and the external façade of a building. Secondly, the findings suggest that colour use has the potential to affect children's feelings, mood,

emotions, motivations and perhaps even desire to come to school. Thirdly, colour can become an 'identifier' for spaces in school, whilst it also seems to allow children to form connections with specific spaces, or the whole school itself in identity building. Although there are divided opinions on the use of colour in the school, it remains that colour has an impact on children's perceptions of school and the use of it should be carefully considered.

7.5 Feeling safe and secure

Feeling safe and secure in the school environment was frequently highlighted by the children as an important factor at school as previous studies have also shown (Edgerton et al., 2011, Burke and Grosvenor, 2015, Brkovic et al., 2015). Ways in which children expressed that they feel safer at school were found to be concerned with **spatial (or physical) characteristics, the school layout, the appearance of the school** and **the presence of people.** Physical security measures identified by the children included; having a school fence, the school gates, having CCTV at school, the use of solid materials and knowing there are locks on doors. The importance of the school gates as a landmark, representative of the whole school itself, has already been identified earlier in this chapter, however, the physical presence of the school gates also affected children's feelings about safety. It became clear that the school gates are important, providing feelings of **safety and security** for the children, as Anabelle at School D

Figure 7-29 School D entrance gates, taken by Robbie

"Researcher: What do you mean by that, how does it look safe?
Anabelle: Well safe, it has like gates around it…and if somebody tries to get in…they usually lock the gates so somebody would have to climb over if they wanted to come in…and by secure, I just feel secure in it…I don't know how, but you just, I feel safe. Safe and secure"

Anabelle, School D,
Phase 3 Scrapbook interview

suggests, she likes her school building because it looks "*safe and secure*"; Figure 7-29. As the extract from Anabelle suggests, there is something other than the physical environment that makes her feel safe and secure at school. This alludes to the idea that the school, as a complete entity, can subliminally communicate an aura which impacts on children's perceptions of safety (Brkovic et al., 2015 pp.84-85). However, it perhaps also raises a question about children's fear of crime and whether the mere existence of the gates and fence enhances the perception of crime beyond the perimeter of the school.

Figure 7-30 School C exterior is 'made of bricks', photo taken by Camille

"Because, like if anybody tried to knock anything down, it wouldn't help. It wouldn't actually do it straight away, they would have to get something rock hard. And it's safe because, of the teachers that come out and the gates are actually locked, so nobody can get in the gates and they have got ink at the top of the gates…so if people put their hand at the top of the gate and try to climb over, it won't happen because they will get ink all over their hands"

Summer, School C,
Phase 3 Scrapbook interview

Additionally, materials may have an impact in feelings of security. For example, Summer, at School C, suggested in her scrapbook that her school building "*looks like a place where children could learn and be safe, it is made of bricks*" and when expanding on this during the scrapbook interview she touches on several reasons for why it is a safe place, making references to physical elements in the environment (Figure 7-30). The use of sturdy materials may potentially impact on children's perceptions about security and could enhance feelings of safety. Considering the children's awareness of materials used in school buildings, as noted earlier in this chapter, this could be a potential area for future research.

Furthermore, there were several spaces within the school environment that were identified as being safe places; this included classroom spaces, library spaces, outdoor classroom, the field and some of the playground spaces. Reasons provided as to why

children felt safe in these spaces were related to both physical characteristics and social considerations; most notably the perceived comfort of having teachers present or their friends around them. Similarly, it has been shown that children's positive feelings (with respect to school experiences) can be associated with relatedness to teachers and peers along with other factors such as feelings of competence, engagement and perceived control (Langhout, 2004). Furthermore, as Langhout (2004) suggests, a holistic place, such as a school, comprises many smaller microcosms with their own activities and determinants which can impact on children's positive feelings. For example, it was suggested by some of the children at School D, that the playground and the multi-use games area (MUGA) were safe or secure spaces. Children revealed that this was not only since these spaces are surrounded by a physical fence, but also the surrounding residential properties were providing surveillance. James, at School D, suggested that the MUGA and field were secure places, in his scrapbook and elaborated on this in the interview, Figure 7-31.

Figure 7-31 A photo of the playground at School D, taken by Lillian. Photo shows the residential homes in the background as mentioned by James

"Like Annabelle said, there's all like, fences around there. And you have got people that are nice, you have got elderly down there and apparently they like - 'cus my Gran used to be in that care home down there – and she used to say she liked looking at all the children play"

James, School D, Phase 3

Scrapbook interview

Although the residential homes are a dominant physical element outside the school grounds, they evoke feelings of 'being watched', by 'nice people', for the children, a form of natural surveillance, which in turn creates the sense that this area of the playground is a safe place. Nonetheless, it was noted during the observation that all case study schools have solid fences surrounding the entirety of the school grounds, as do many schools in the UK. Therefore, it should be

considered that the 'enclosed' physical compound of a school could itself imply the notion that there is a need to be protected from the external community, which may consequently increase these feelings of safety for children.

On a smaller scale, another important safety aspect raised by children at Schools A, B and D[1], was that there should be a suitable, convenient and secure place for them to store bikes and scooters. Personal storage has been highlighted as an important factor for children by Ghaziani (2010). As has been identified in Chapter 6, the bike shed or shelter at school was a commonly photographed and discussed feature that children seemed to have an attachment to, because their personal property was in a place of safety. For instance, at School A, the children expressed delight at the new bike shed (Figure 7-32), as they did not have one at their previous school, this now allowed some of them to ride their bikes to school, ensuring that their bikes or scooters could be safely stored.

Figure 7-32 The bike shelter at School A, taken by Lucas

"I like the bike shelter. At the old school I don't think we could ride a bike or scooter to school because there was nowhere to put them. But now you can."

Lucas, School A,
Phase 2 Child-led tour

[1] At School C, there were no bike storage facilities within the areas explored during the child-led tours

7.6 Summary: The holistic picture of school

"*The perceived environment… may well be as important as the objective environment*"

(Weinstein and David, 1987 p.6)

This chapter has presented the thematic findings relating to children's holistic perceptions of the school environment. Multiple physical attributes of the environment have been alluded to, discussing their impact on children's emotions and feelings at school, however, the experiential nature of spaces, including the physical and social dimensions are also considered. Children's perspectives about the schools have suggested that how children perceive and experience their school building can have a deeper meaning than merely the objective environment, as Weinstein and David (1987) have suggested (above). The chapter has provided insights into children's ideas, feelings, values, preferences and experiences, which can be attributed to building place-identity (Proshansky et al., 1983) within the school setting. As such, the chapter concludes by summarising the key themes and specific elements of the environment that may impact on children's holistic perceptions about school, which in turn, may contribute to building children's place attachment and developing a sense of place at school.

The findings suggest that the appearance of the school is important to children, which seemed to affect their feelings and perceptions of school in positive ways. The way children perceive their school has been linked to engagement and self-esteem (Eato and Lerner, 1981, Edgerton et al., 2011) and positive attitudes can impact on children's desire to come to school (Rudd et al., 2008). Children are active perceivers of their environment; exploring, extracting information and differentiating objects (Read et al., 1999), and it is the meanings that elements of this environment hold for children which can become important in forming an attachment to a place (Stedman, 2002). Multiple physical characteristics were found to affect the overall appearance of the school. The front of the school, school gates and entrances have

been deemed important parts of the school and were found to be, in part, representative of the school's identity, contributing to feelings of security, whilst they can become a landmark in the school grounds (Ghaziani, 2008). The front of the school is a place with which children could identify; a place where children felt visual appearances and attractiveness were important, as others have also suggested (Rinaldi, 2006, Dudek, 2007, Edgerton et al., 2011). Furthermore, the shape of the school seemingly had similar consequences, whereby the shape of the school can have significant meaning for the children, as Malcolm et al. (2011) have also reported. Children expressed a strong desire for the school to be unique, the form of the school building played a role in shaping this identity, suggesting that children see their school as a symbolic place (Loxley et al., 2011). As Halford (2008 p.931) suggests: "location, architectural forms and organisations of space" can provide aesthetic cues which communicate underlying values and identity. Similarly, the size of the school and layout of the school (the ease of navigation) further impact on children's perceptions of the school. Where the school was seen to be large, this was defined as a positive characteristic which assisted in the development of the status and identity of the school, with reference to the wider community (Tanner, 2000).

Children's awareness of the use of colour and materials in their schools was identified as an additional theme which affected children's perceptions of their school, both internally and externally, and was linked to positive emotions and feelings. It is known that colour attracts children's attention (Camgöz et al., 2004) and can evoke positive feelings (Cubukcu and Kahraman, 2008). Children indicated that the use of colour led to them feeling happy, excited, motivated and comfortable at school. Colour was seen to be an 'identifier' which facilitated wayfinding and building connections, or attachments, to specific spaces. Materiality was linked to the use of colour, texture, pattern and contrast. In relation to the school's external appearance, children showed an awareness of construction materials used for the buildings. Considering the significance of the school's exterior appearance, and the fact that the appearance of materials can have underlying values for children (Day and Midbjer, 2007), materials chosen for the external façade could also be seen to contribute to building the identity of the school. Additionally, colourful wall displays on the interior of the school building were found to positively affect children's

feelings and have been found to contribute to feelings of pride, ownership (Killeen et al., 2003) and a welcoming school (Maxwell, 2000). However, the use of colour in the interior environment was debated by the children and preferential differences have been highlighted (Higgins et al., 2005b).

Feeling safe and secure at school was linked to many of the themes discussed in this chapter and was affected by physical characteristics; the school layout; the appearance of the school; and the presence of people. Physical aspects, for example, the school gates, were found to be related to children feeling safe in their school site whilst natural surveillance of surrounding urban environments may also enhance these feelings. Additionally, children identified with specific 'safe spaces' at school, notably the classrooms. Feeling safe and secure at school can affect children's experiences in school (Edgerton et al., 2011, Burke and Grosvenor, 2015, Brkovic et al., 2015). Furthermore, how the school appears to children, in terms of both physical and social characteristics, can influence their perceptions of safety (Brkovic et al., 2015) and therefore, has the potential to influence overall perceptions of the school.

This chapter has discussed children's holistic perceptions about school. Children's predominantly positive perceptions appear to contribute to building a picture of the whole school whilst it has also been noted, with reference to the existing literature, that there is potential for these perceptions to impact on attitudes and well-being. Evidence has suggested that elements in the environment can positively impact on children's learning, physical experiences, social interactions and emotional well-being (Malone, 2008, Mahdjoubi and Akplotsyi, 2012). As noted by McEwen et al. (2011), children's perceptions are related to psychological processes and children's attitudes may be important in moderating the variables between perceptions and achievement. However, whilst positive student perceptions have been linked to self-esteem, it should be noted that this does not necessarily mean it will impact on a child's performance (Eato and Lerner, 1981, Talton and Simpson, 1987).

Similar to Edgerton et al. (2011), the findings discussed in this chapter indicate that children perceive the school environment as a complete entity. The look and feel of the school has been found to matter to children and this is deeply connected to

attitudes, behaviour and sense of belonging (Hebert, 1998), as many of the themes outlined in this chapter have suggested. Physical characteristics and a school's appearance can play a role in developing the collective identity of the school, through the eyes of the children, and this can become important for children's development; as place- identity can influence self-identity (Proshansky et al., 1983). The implications of these findings, and the discussion surrounding children's place experiences and place-identity of the school, are extended in Chapter 10, Section 10.2.3, provided as a response to the third sub-research question. To conclude, Figure 7-33, by Layla at School B, emphasises the importance of understanding children's perceptions about the holistic school and highlights the fact that the "whole school" is important to children.

Figure 7-33 The "whole school" by Layla, School B

"Here's the whole school - that's important to me because it's a place where we learn and it's a place where we get educated. It's important to take that picture to say that it's not just different parts of the school that we care about, it's all of it...'cus that's the place we learn"

Layla, School B,

Phase 2 Child-led tour

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Chapter 8

Desirable characteristics at school

"...it makes you feel safe enough to learn. And [if] you feel comfortable where you are...you get on"

Lillian, School D, Scrapbook interview

8 Desirable Characteristics at School

8.1 Introduction

Following Chapter 7's overview of children's perceptions of the 'whole school', the focus of this chapter is on learning spaces. As introduced in Chapter 6, classrooms were frequently photographed and discussed by the children across all schools, being named as a place where children felt good at school and featuring in children's drawings as the best place to learn. Additionally, classrooms were rated as one of the most liked and important interior spaces at Schools B, C and D[1] in the photo rating survey. Findings discussed initially in this chapter relate to children's views on the classrooms, including their needs, wants and desires that emerged from the thematic analysis process. However, the importance of other learning spaces at school has also been raised by the findings in Chapter 6, with school halls and libraries being amongst the most liked and important spaces. As such, children's needs in relation to ancillary spaces are discussed, followed by desirable environmental conditions and the tools children suggest they require for learning. The chapter again begins with an overview of the themes that underpin the discussion. As in Chapter 7, the themes are inter-related and emerged from the collective data analysis across all four case study schools, therefore, a summative analysis is provided. Direct quotations from the children (anonymised) are used where appropriate, with children's drawings and photos used to further illustrate the findings.

8.2 Thematic overview

As in Chapter 7, the outcome of themes associated with desirable characteristics in the school environment were found to be a series of related concepts. Figure 8-1 is a coding hierarchy diagram, generated from NVivo software. This provides an indication of the coding frequency for the major codes which led to the development of the themes that are discussed in this chapter (refer to Appendix H for further diagrams). Figure 8-2 outlines the key themes and associated sub-themes that form the key

[1] At School A, as children had physically entered classrooms during the child-led tours, to take photographs, many of the photos of classrooms that included children were excluded from the survey, where photos of children's faces were omitted from this task. This may explain why classrooms do not appear in the most liked and important photos for this school. Nevertheless, the two photos that were included in the survey were 'liked a lot' by over 50% of the children and there were 5 children choosing photos of classrooms to include in their scrapbooks.

characteristics for discussion in the chapter. Figure 8-3 suggests linkages and relationships between themes.

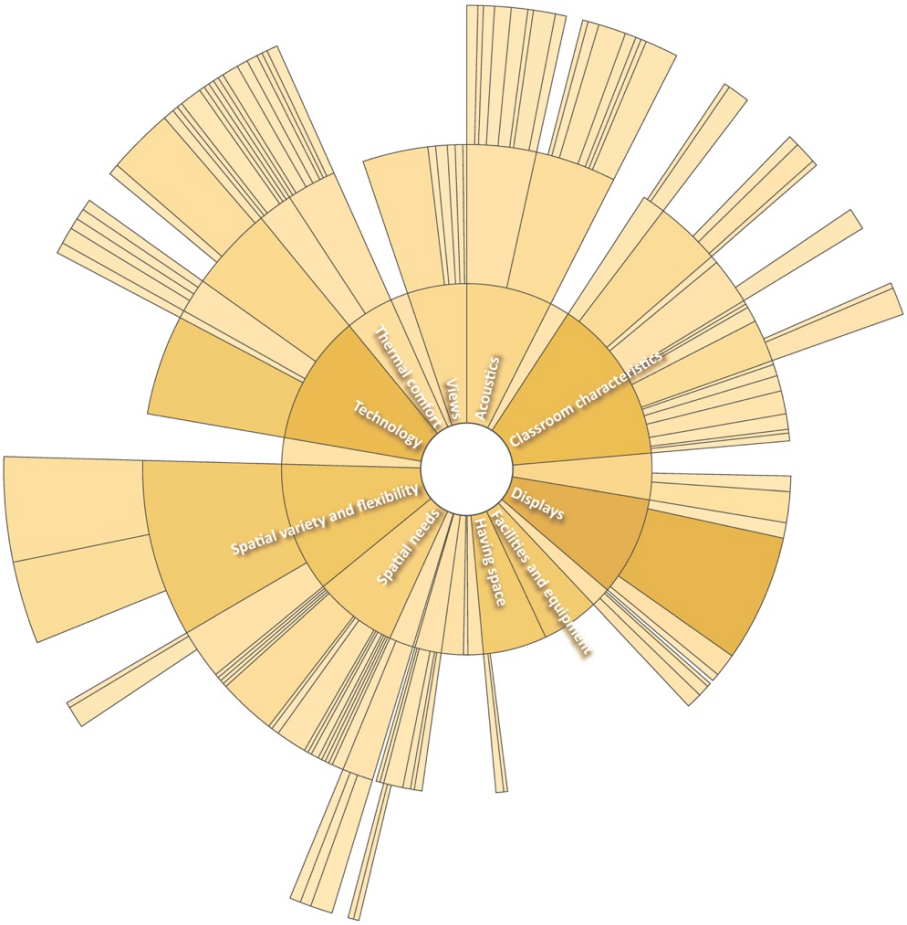

Figure 8-1 Coding hierarchy rose related to desirable characteristics at school

This rose shows a selection of the codes developed during the data analysis process that were related to the desirable characteristics about school and led to the final set of themes identified in Figure 8-2. The variation in colour tone represents the amount of coding references and the segments are sized by number of sources that have been coded

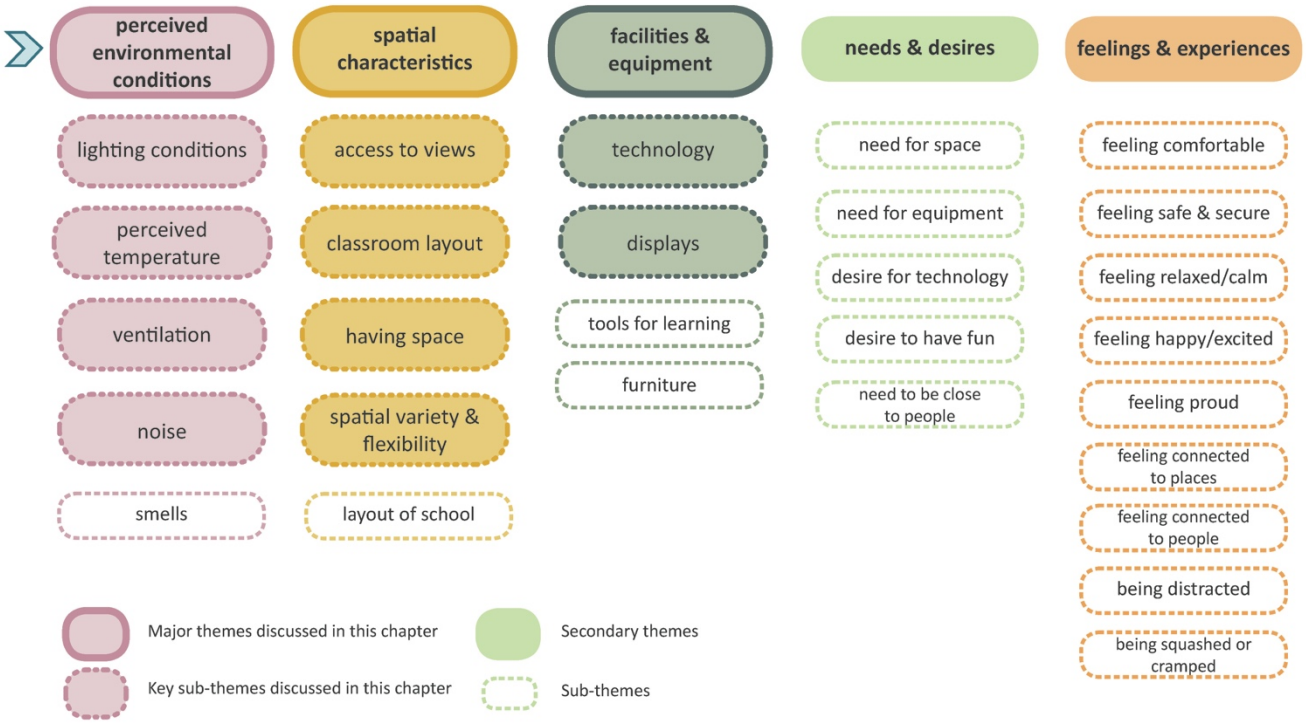

Figure 8-2 Summary of themes relating to desirable characteristics at school as identified by the children and discussed in this chapter

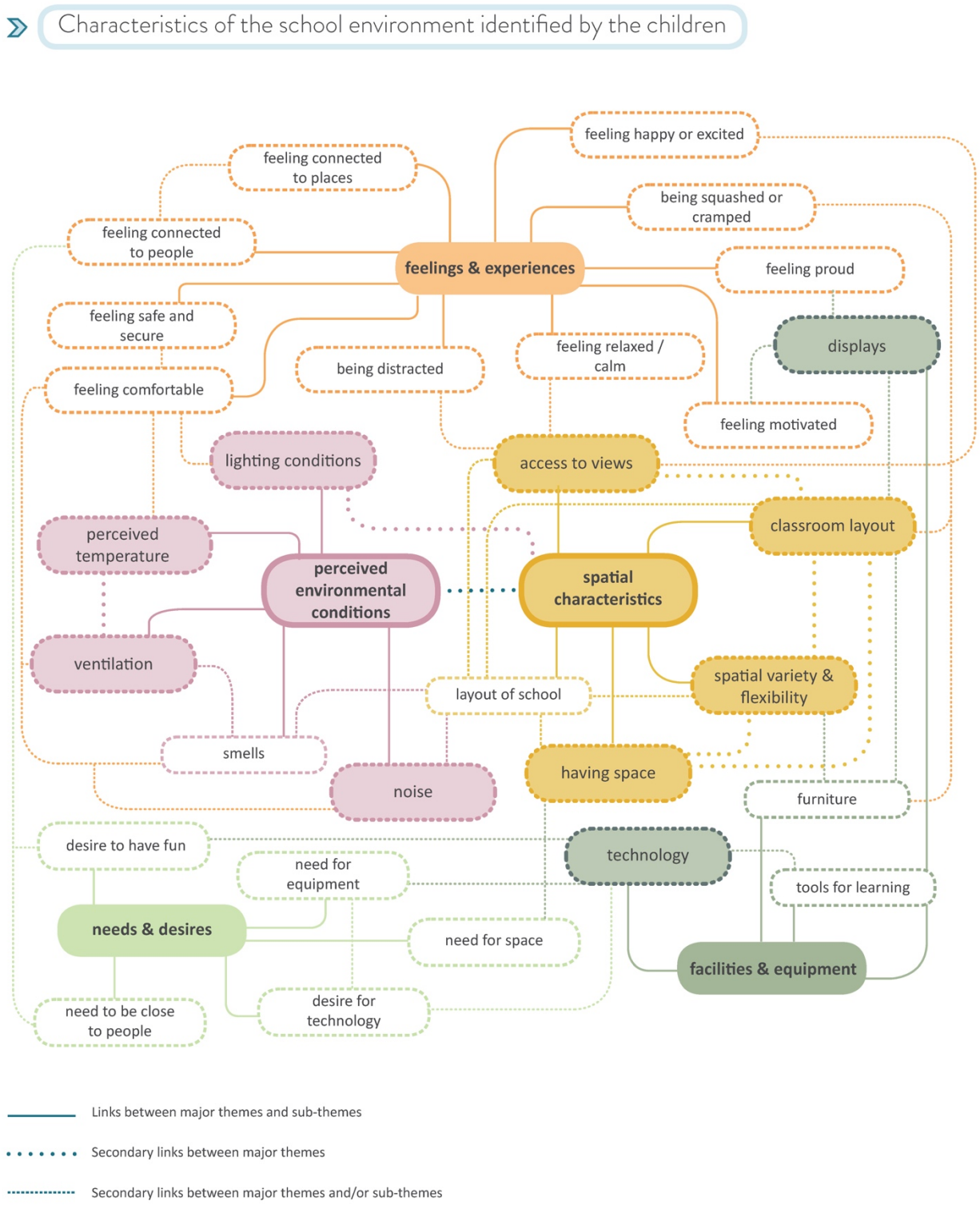

Figure 8-3 Summary of the inter-connected themes that emerged from data analysis, relating to environmental and spatial characteristics, as identified by the children

Note: The diagram shows the complex web of relationships between themes. Connections indicated are not exhaustive as many of the themes are connected to multiple factors

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8.3 Building the children's picture of the classroom

It was confirmed in the preliminary findings, in Chapter 6, that children thought the classroom was an important place at school, viewing it as a good place to learn and a place where they feel happy in school, amongst others. This is not necessarily an unexpected finding and it could be suggested that this is predictable, as it is the place where children spend the majority of their time learning and has been found elsewhere in the literature. However, it confirms that children were generally happy with their classrooms in new school buildings and raises questions such as:

- Why do children feel happy in their classrooms?
- Considering evolving pedagogies, advances in technology and lifestyle adaptation, have the needs of children in a classroom space changed at all over the last 15 years?
- What elements of the classroom are important to children now?
- Are there any outstanding issues in classroom spaces that should be considered in school design going forward?

Answers to some of these questions have become apparent through data analysis and the discussion that follows aims to provide an insight into the classroom (or learning space), from the child's perspective; examining how children feel about their classroom and how spatial and environmental conditions can have an impact on their experiences.

Even though the classroom was considered as one of the most important spaces, children expressed both positive and negative views about the classroom. With reference to Section 7.5, children's desire to **feel safe and secure** at school is a theme that emerged on both the 'macro scale' of the school and also at the 'micro scale' of the classroom. Children expressed their need to feel safe and secure in their classrooms, as has been found by others (Edgerton et al., 2011, Burke and Grosvenor, 2015, Brkovic et al., 2015). Children suggested that key factors in ensuring this, were the **presence of the teachers** and **being close to friends**. The theme of **feeling safe** in the classroom could also be linked to **feeling comfortable** and **feeling happy** in the classroom. Lillian, at School D, had indicated in her scrapbook that her "*friends and the kind teachers*" made her happy in the classroom:

"Researcher: How does having friends and the kind teachers make you feel happy in the classroom?

Lillian: Because it makes you feel safe enough to learn…and you feel comfortable where you are, you get on…"

Lillian, School D,
Scrapbook Interview

In this case, Lillian feels safe, in part, because she is surrounded by people. However, as noted in Section 6.3.3, children discussed positive factors about the classroom relating to: **technology and ICT**; **environmental characteristics**; **visual elements**; and **physical features** in addition to **people,** which may also contribute toward the feelings of comfort and safety desired by the children. In Chapter 7, children's need to feel safe and secure was discussed in terms of potential impact on children's positive perceptions of the whole school. However, it should also be considered within the classroom and other spaces in the school. Maxwell (2000) has highlighted the importance of the physical environment in making students, teachers and staff feel safe and comfortable, as it can "*create an atmosphere conducive to learning and teaching*" (p. 280).

There were specific physical and spatial characteristics, linked to the design and layout of the classroom, that were suggested by the children as impacting on their experiences in the classroom, including **having space**, **classroom layout**, **furniture**, **displays**, and the use of **technology**. Building on the notions of feeling safe and comfortable in the classroom, the children felt

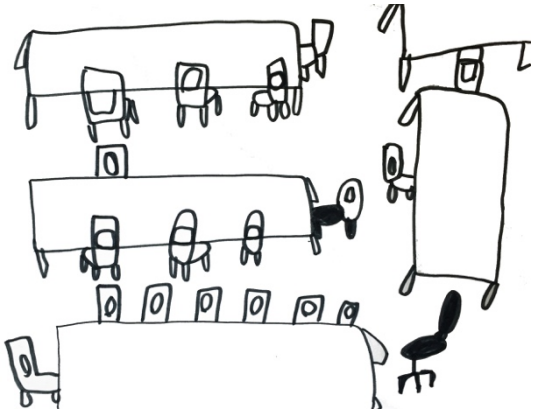

Figure 8-4 Drawing of the classroom, by Angela, School A

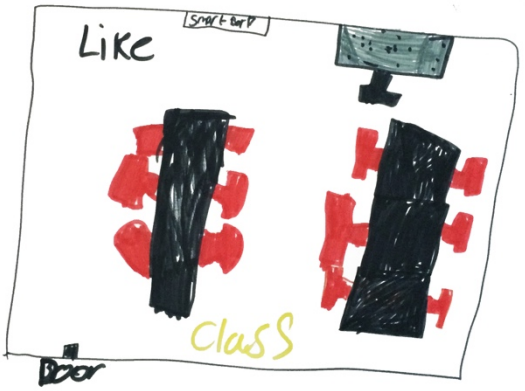

Figure 8-5 Drawing of the classroom by Katie, School C

Figure 8-6 Typical Year 5 classroom at School D

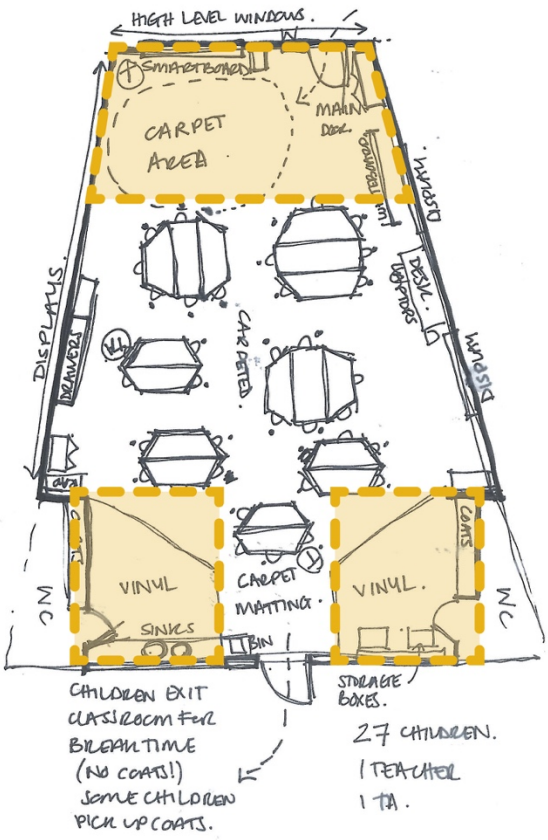

Figure 8-7 Typical Year 5 classroom layout at School D, with 27 children, observation sketch by researcher

Observation note: Zones highlighted indicate areas of free space in the classroom

that **having space**: "*enough space to learn*", was important. Children talked about this in a practical sense, having enough space at their desks and having enough space and the flexibility to do different activities, and also in a visual sense; for example, whether their classroom visually appeared to them as large or small in size. For example, Belle at School D commented in her scrapbook that the classroom was "*vast*" and discussed how she thought this helped when learning:

"Because if your classroom is big then it helps you learn more because if you wanted to do an activity then you can go round the class and you have more things to measure or something…it's good to have a big classroom I think"

Belle, School D,
Phase 3 Scrapbook interview

From the observation, it was apparent that classrooms at School D were spacious compared to that of the other case study schools. With reference to Figure 8-6 and 8-7, at the time of observation, there were 27 children in the space and it can be seen that the classroom was fairly long in plan, with a wall of glazing to the rear. There were spaces to the front (carpet area) and the rear of the classroom (sink and coats) where there was no furniture. The size and spatial arrangement is thought to have an impact on children's (and teacher's) perceptions of the space (Darmody and Smyth, 2012). Nevertheless, there are other factors which may affect how children experience their

classroom environment; for example, visual diversity from wall displays (Godwin and Fisher, 2011, Fisher et al., 2014) or the use of different colours (Pile, 1997, Barrett et al., 2015a, Yildirim et al., 2015).

The **classroom and furniture layout** were discussed by children in terms of **flexibility**, the appropriateness for specific activities and how it affects them when they are learning. It is believed that the arrangement and layout of furniture in a classroom to affect young children's learning, pupil participation and positive attitude in the classroom (Higgins et al., 2005b p.24). Issues with furniture layout were also noted by the researcher during the observation, as some of the classrooms were found to be causing issues with basic circulation. This was predominantly at School C and children raised the issue of being "*squashed*" or "*cramped*" in the classroom, where some of the participants were based in the smallest classroom in the school. However, discussions regarding having enough space in the classrooms was not limited to School C. For example, Serena at School B suggested that she liked learning in the hub space; see Figure 8-8 and quote opposite.

Nevertheless, limited space in the classroom is not merely a design issue and social density must also be considered as a contributory factor for children feeling cramped. Social density in the classroom may affect children's (and teacher's) perspectives on their classrooms (Darmody and Smyth, 2012) which can affect how comfortable children feel in the classroom, and ultimately this can potentially

Figure 8-8 Year 5 hub space at School B

"Yeah, 'cus like, it's not like they are too close, like they are sitting here. Like Robbie would be sitting there right now, if I was in English and Rena would be sitting there and they are really close to you and there is not enough space to spread out"

Serena, School B,

Phase 3 Scrapbook interview

Figure 8-9 Typical classroom at School B

impact on achievement and well-being (Finn et al., 2003). The case study schools generally had between 25 to 30 children per classroom. Moreover, in addition to raising the issue of cramped conditions at the tables, some children also reported the circulation issues as had been observed by the researcher. For example, Lewis at School C, was based in a Year 4 classroom similar to Figure 8-10, and talked about his classroom being small in relation to social density:

"It's small because some, you have got a lot of people in your class and if there's a crowd then you gotta try and squeeze through, to get to your table or something. So if the classroom's bigger, you won't have to keep crowding through the people"

Lewis, School C,

Phase 3 Scrapbook interview

Darmody and Smyth (2012) suggest that spatial density, in conjunction with social density, can also affect children's outcomes in schools, noting that if children find themselves in cramped conditions it can adversely affect engagement and attainment (Maxwell, 2003). Issues of cramped conditions in classrooms may also have implications for children with regard to their personal space; for example, overload of stimuli or interpretations of stress (Bell et al., 1996). Maxwell (2003) argues that the amount of space per child in the classroom is important for learning and behaviour, highlighting the importance of the "*micro-environment*" (p.573) of the classroom. If

Figure 8-10 Typical classroom at School C

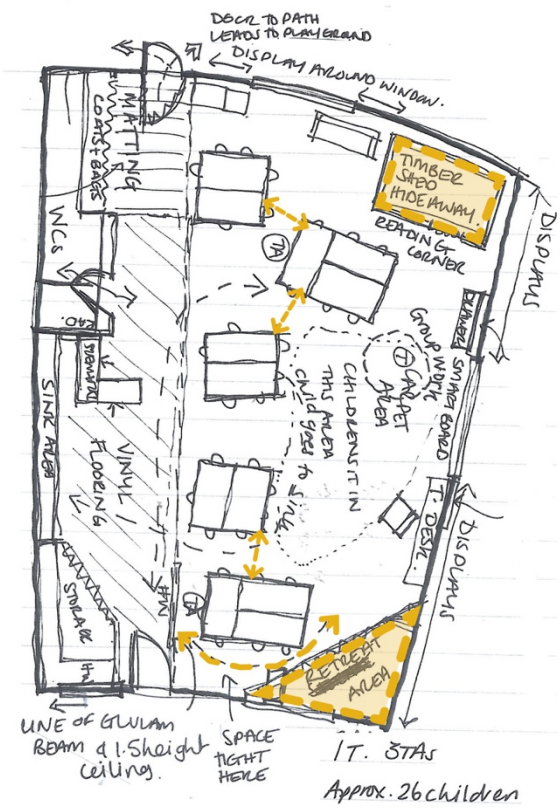

Figure 8-11 Year 4 classroom layout at School C, with 26 children, observation sketch by researcher

Observation note: Zones highlighted indicate retreat or calm down areas. Arrows indicate were circulation was restricted between tables

some children in the case study schools felt cramped in the classroom, it may suggest that classrooms may not be large enough for current class sizes. Although, this is dependent on both spatial and social density of the individual cases. Where children may be experiencing negative feelings in classrooms, this could potentially lead to psychological stress and discomfort, as has been found previously in adults (Sundstrom, 1978). Furthermore, there can be different effects depending on gender; girls can be affected academically, whilst boys may suffer behavioural impact (Maxwell, 2003).

Moreover, the **comfort of the furniture,** in both the classroom and other learning spaces, was also raised by children as a factor that affects them whilst in a learning situation. For example, children discussed the ergonomic comfort or discomfort of the furniture in the classroom, their desire to have soft furnishings available in learning spaces and having comforting areas to relax in. Interestingly, at School C, every classroom in the school has a 'calm down area'. This is a small area of the room where children can choose to go and spend some time as and when they feel like they need to 'calm down'. Calm down areas are designed and constructed by the classroom teachers; for example, some were full-size 'Wendy' houses whereas others were constructed using fabric drapes and cushions. Children at School C frequently discussed the calm down areas and referred to them as a good place to relax and feel happy; Figures 8-12 and 8-13.

Figure 8-12 Reading corner and retreat area at School C

"…if you are angry at a friend or something, there's a place where you can go in the class that's called the calm down area. And if you go in there, you just go in there for a few minutes and nobody disturbs you. You get to have a rest until you are happy again…I don't use it a lot, I only use it like sometimes when I'm like sad…it's dark, but not too dark, if you are afraid of the dark, but you can still have a little bit of light. It's got like blankets in and teddy bears"

Jamie, School C,

Phase 3 Scrapbook interview

Figure 8-13 Retreat or 'calm down' area at School C, photo by Alisha

In addition to the spatial layout of furniture, the **shape and layout of the classroom** has been found to affect **flexibility** of the classroom and how it might be used for learning (Barrett et al., 2015b). During the observation, it was noted that children would refer to the wall displays whilst they were working, however, the layout of the classroom, at times, seemed to affect children's ability to be able to see some of the displays. This was identified by Faith at School B, writing in her scrapbook that "*the building isn't level*" as something she did not like about the classroom:

"It depends where you are sat because some displays you can see and some that you can't. 'Cus in like Maths, you can only see the English display, it's like oh!...Say you are like doing this [acts out trying to see something on the wall] and Miss A is wondering what you are doing, and then you have to get up…And then when you get up, you get told off"

Faith, School B,
Phase 3 Scrapbook interview

Children's ability to see the displays or the white/smartboard could potentially have an impact on their learning and engagement. Depending on the age of the children, the need for flexibility and complexity (room shape) of the classroom varies, as older children (Key Stage 2) have been found to benefit from more formal learning arrangements whilst younger children (Key Stage 1) may require varied learning zones (Barrett et al., 2015b). DfES (2014) indicated that

Figure 8-14 Year 5 Classroom at School B showing windows being used for displays, restricting views to the outside (see p.232)

Figure 8-15 Internal classroom window at School B, showing restricted view due to storage and displays (see p.232)

flexibility is a key design requirement of primary schools, although warning that 'L' shaped classrooms can restrict furniture layouts and sight lines. Issues concerning sight lines and visibility of learning aids for children, again highlights the importance of the micro scale classroom environment and the need to build an understanding how small details might impact on children's experiences.

Access to views from windows and within the school environment, was another characteristic of the classroom enjoyed by children at all four schools. Comments were not limited to views from the interior environment, rather, children also noted views around the school grounds in the external environment. Children thought that "*being able to see outside*", views to the natural environment or views to the sky were positive attributes of the classroom. Similarly, Dutt (2012 p.207) argued that indoor-outdoor interfaces provided "moments of joy" for students, which can have positive effects on well-being, whilst Ghaziani (2012) identified that a view of nature was important for children, although not as important as other facilities at school. Ulrich (1984) provided evidence highlighting the healing effects of views to natural environments which can also promote positive classroom outcomes and perceptions (Benfield et al., 2015). Moreover, reasons why children liked having views outside included the need to "*look outside to think*"; for example, this was raised by Amelia at School B, suggesting that covering the windows and doors (Figure 8-14) with pictures was unnecessary:

Figure 8-16 Photo of the classroom taken by Tom during the child-led tour, School D

"Researcher: Do you ever look out of those windows?

Belle & Tom: Yeah

Belle: Because I remember once in class, it was snowing and then, our friend said "look it's snowing" and then we all just looked outside and it was snowing.

Researcher: What do you look out onto, out of the window?

Belle: I just like seeing what happens outside.

Researcher: What happens outside?

Belle: Like there's cats and there's lots of birds and stuff

Tom: I like when it rains

Belle: Yeah

Tom: Yeah, when it rains outside

Belle: You just, you can see whether it's going to be playtime or not"

Belle and Tom, School D,
Phase 3 Scrapbook interview

"…sometimes, we look outside to paint a piece of paper, a picture; that's what we used to do and some posters are there from ages ago that we don't need…sometimes people look outside, just to think. 'Cus it makes them think a bit more. 'Cus it's nice and bright. And peaceful. Unless people are running past."

Amelia, School B,
Phase 3 Scrapbook interview

This was also found by Dutt (2012), suggesting that windows provide children with mini-breaks which can aid productivity. Furthermore, Barrett et al. (2015b) found that views of nature are important for classrooms including natural elements; for example, grass, gardens, trees and ponds, suggesting that teachers should maintain views to outdoors where possible by minimising the use of windows for displays. Children also suggested that they liked to see outside to observe changes in weather and to see activity in the playground and other external areas, as Beth and Tom discussed at School D; see Figure 8-16 and quote opposite.

Interestingly, at School A, the skylights (Figure 8-17 and 8-18) in classrooms were also important for the children, as has been mentioned in Chapter 6. As such, views to the sky were frequently discussed by the children. Views to the "*sky*" and "*moving clouds*" from the skylights seemingly heightened awareness of the natural world; also suggested by Dutt (2012). It is worth noting that the old school did not have sky lights in the classrooms and therefore, the fact that these skylights were new to the children, and that they

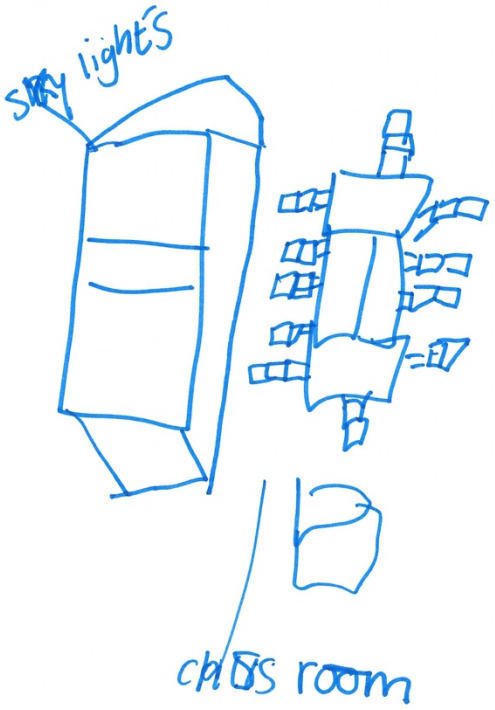

Figure 8-17 Scrapbook drawing of the classroom and skylight at School A, by Leah

Figure 8-18 Classroom at School A indicating the location of skylight

Observation note: Classrooms had either 1 or 2 skylights per room and were also located in the hall and circulation spaces

were constantly being opened and closed due to carbon dioxide sensors in the classrooms, may have impacted on why they were so popular at the time of conducting the research. Nevertheless, it could be seen that the introduction of the carbon dioxide sensors and the skylights had an impact on children at School A; for example, Sophia pointed this out:

> *"…when you get hot, the monitor will tell you and you can open the skylight and see through the roof and the sky…You just see the clouds. And if you like concentrate, you can see them that they are moving"*
>
> *Sophia, School D,*
> *Phase 3 Scrapbook interview*

Many of the children were familiar with the carbon dioxide sensors and the automatic opening of the skylights was noted by the children which was also evident during the observation. Although some of the children had a misconception about what exactly the carbon dioxide sensors were monitoring, it was interesting to observe how a device such as this had potential for becoming an environmental teaching tool. Additionally, Dutt (2012) found that skylights could be used as an educational tool themselves, as teachers used skylights for learning about the weather. Similarly, Brkovic et al. (2015) suggests physical elements and/or technological installations in learning environments can be used as cues to prompt learning and the school building has potential to become the 'third teacher' on issues of sustainability. However, the skylights were a contentious topic as some children found them distracting. Kieran at School A explained in his scrapbook that he liked the skylight because "*you can see the sky better*", yet he also discussed the potential for distraction:

> *"Kieran: But we get a little bit, some children get a little bit distracted. Like when it's thundery and lightening, people will look out of the window to see what's going on*
> *Sophia: Or loud noise…You look out the window and sometimes stand up*
> *Kieran: And then we just walk to the window"*
>
> *Kieran and Sophia, School A,*
> *Scrapbook interview*

This indicates there is may be a balancing act between providing sufficient views to the outside for the associated benefits and the potential for distraction in the classroom. However, the positive factors which have been discussed, offer children short breaks from their work and whilst this can, at times, be seen as a distraction, as Dutt (2012) and others (Heschong and Mahone, 2003, Benfield et al., 2015, Lechner, 2015) suggest, these brief snapshots of the natural world provide visual relief and may ultimately improve productivity and achievement in the long run.

8.4 Alternative places to learn

Having different spaces to learn in was seen as a positive characteristic of the school, linked to the themes of **spatial variety** and **flexibility**. Additionally, children expressed there was a need for spaces for activities, spaces for special events, spaces for assembly and a need for variety in play areas and school grounds.

It has been shown in Chapter 6 that various ancillary spaces, such as break out areas, including libraries and 'hub' spaces were good places to learn, and children felt that group rooms or ICT rooms were beneficial to their learning. For example, Serena at School B explained that she liked learning in the hub because it was "*nice and big*"; see quote opposite and Figure 8-19.

However, Barrett et al. (2015b), proposed that breakout zones in corridors are less effective than break out zones within classrooms, which were found to have a positive effect on learning. Whereas the children at the case study schools described break out spaces in hubs or areas off circulation zones as good places to learn as well as libraries being rated as liked and important spaces in the photo rating survey (Chapter 6). This suggests that there were some qualities to these spaces that appealed to children. Reasons children suggested they liked to learn in other spaces included: quieter conditions and ability to concentrate; having more space; learning in smaller groups; the subject being taught; access to computers; and also fresh air, in relation to external spaces. However, it should be noted that

Figure 8-19 Year 3/4 hub space at School B, photo by Amelia

"Serena: 'Cus in the classroom it's just like only a quite a little place but then in the hub it's just nice and big and just like freedom
Researcher: And why is that important?
Emma: 'Cus then you don't have to squash up with everybody else
Serena: Yeah, 'cus sometimes like – we got a new person, in our class, 'cus like we had to move chairs, it was just really frustrating

Serena and Emma, School B,
Phase 3 Scrapbook interview

different user groups may have diverse perceptions of the environment (Maxwell, 2000, Edgerton et al., 2011) and where some of these spaces were desirable for some children, they may not be suitable learning spaces for others.

Where children expressed a desire to learn outdoors, they referenced outdoor classrooms or the natural environment, this is discussed in more detail in Chapter 9. For example, Faith, at School B declared in her scrapbook, that the best place to learn is "*outside*"; Figure 8-20, claiming that this helps to motivate the children.

The findings suggest that alternatives to the classroom, such as hub spaces and even outdoor spaces, were widely liked by children and can offer more desirable conditions for some users. Lippman (2010 p.1) argues that learning environments should be designed responsively, with consideration for the social environment; the physical environment can be structured to support learning. This may require flexibility in the way that learning spaces are defined, considering the notion that pupils' learning is continuous and flow between spaces. Furthermore, Hertzberger (2008) believed the "more nooks, corners and out-of-the-way places the better" (p.79), suggesting learning "islands" are formed into a landscape, where circulation space is immaterial. Building an understanding of how different types of physical space in the school environment facilitate learning and the role of the social environment, is important (Lippman, 2010 p.4) and is an avenue for future research.

Figure 8-20 Scrapbook drawing of the field at School B by Faith

"Because they are not stuck in a classroom. 'Cus when you are in a classroom, you are always like, oh, can't be bothered with it, but when you are outside it's something different…"

Faith, School B,

Phase 3 Scrapbook interview

8.5 Perceived environmental conditions

As noted in Chapter 2 (in the literature review), research relating to environmental variables has tended to focus on individual factors with issues such as air quality, light and noise being linked to academic achievement and student experiences at school (Darmody and Smyth, 2012). Ghaziani (2012) has suggested that children were themselves concerned about comfort and control of their school environments, including issues concerning room temperature, provision and control of ventilation, good levels of natural daylight and the use of blinds, control of artificial lighting and having good acoustics (ibid). Similarly, the children have raised environmental issues in the findings of this thesis, including: **acoustic conditions**, **lighting conditions, temperature control** and **issues with smells**, being referred to in both positive and negative ways.

8.5.1 Desirable acoustic conditions

Transmission of sound and noise within the school environment was the most commonly discussed environmental characteristic, being raised by the children in both positive and negative ways. This could be due to the more tangible nature of noise issues (Barrett et al., 2015b). A simple definition of 'noise' is 'unwanted sound', however, the concept of noise involves a psychological element (unwanted) and a physical element (perception by the ear) (Bell et al., 1996). Evidence in the data suggests that 'noisy' spaces at school could be: classrooms, spaces outside classrooms and some areas of the playground or play areas. Where noise was identified as a negative issue, this was generally due to: raised noise levels in classrooms, children at play in the playground, children's movements around school in corridors and where there were shared toilets between classrooms. Sound transmission from shared toilets was reported by some children at School D[1]; Figure 8-21:

[1] School D was the only school where shared toilets were located in between classroom spaces and accessed directly from the classroom environment.

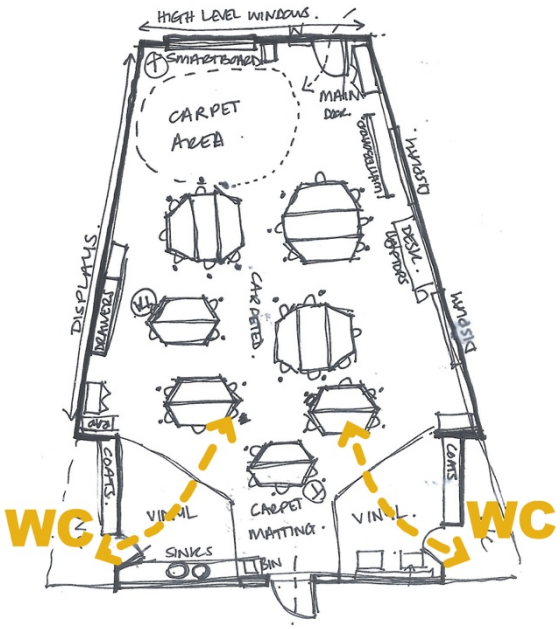

Figure 8-21 Classroom layout and toilet access at School D, observation sketch by researcher

"Researcher: You said you don't like having to share toilets with the other class, why is that?

Belle: Because they always shout and, yeah…and they always just talk and stuff and then, yeah.

Researcher: So can you hear that in the classroom then?

Belle: Yeah. And like the boy's toilets as well, you can just hear people shouting and talking and stuff

Tom: And when you are trying to work, when the door opens all the time, you just can't concentrate"

Tom and Belle, School D,

Phase 3 Scrapbook interview

This raises the concern that noise from shared toilets between classrooms can affect children's experiences in the classroom, and as Tom mentions, this can have an impact on concentration levels. It is also worth considering that this may also impact on children's desire to use the toilets during lessons. Moreover, noise in the classroom environments was not always referenced in the first instance, rather it was where children tended to draw comparisons back to the classroom whilst discussing other learning spaces. For example, a small group room at School C was identified by Summer as being preferable to learn in, as opposed to the classroom (Figure 8-22):

Figure 8-22 Group room at School C, photo by Summer

"I liked this room because it's more calm and good to learn in. If somebody was in here, they might want to like try to calm the children down and ask them to do harder work because they might not be concentrating well in the classroom…It's quiet, you can still hear people walking past and doing things but it's not going to be as loud as it would be if it was out there [corridor] on a table. I would rather be in here to learn because there's a lot more things, because you can learn from the walls…I think I like this room a lot, rather than being in a classroom with a lot of people shouting across the tables and talking a lot. I think there's a bit too many [children]"

Summer, School C,
Phase 2 Photo review, Child-led tour

Although Summer refers to the fact that she likes to learn in this room because she can "*learn from the walls*", using the displays, she also considers this group room to be a calm place away from the noisier classroom or corridor break out spaces. This reinforces the fact that some children require quiet spaces in which to learn and that noise in the classroom from both the children themselves and adjacent spaces can, as would be expected, be negatively perceived. Additionally, research has indicated, there can be adverse effects of ambient noise, in both the classroom and from external sources, on children's experiences in the classroom (Dockrell and Shield, 2006). Teachers have also expressed concern about the impact of noise on teaching, learning and children's concentration on school work (Darmody and Smyth, 2012). However, Barrett et al. (2015b) suggest that acoustics is a secondary factor to other more important environmental variables such as temperature control, light and air quality. Although they do point out conclusions from Crandell and Smaldino (2000) and Picard and Bradley (2001), indicating that the acoustic environment within a classroom is "*a critical factor in the academic and psychosocial achievement of children*" (Barrett et al., 2015b p.24); suggesting that external noise should be minimised, internal noise reduced, and the shape of the room be considered to allow children to hear the teacher (ibid).

Across all four case study schools there was an inherent need expressed by children for quiet spaces at school. This was frequently in relation to providing spaces to relax and to have 'down time', although it was relevant for learning spaces, as children also revealed a desire for quiet conditions for learning. Some of the alternative places to learn that were identified in Chapter 6; for example, hub spaces, group rooms, the library and outdoor spaces, were thought of as good places to learn because they provided quieter environments than the classroom; Figure 8-23.

Many outdoor learning spaces, including areas of natural environment, were referred to as peaceful places. As Ghaziani (2010 p.16) suggests, children seemingly welcome the silent spatial qualities. Whereas, some children at School D also referred to the classroom itself being peaceful; for example, Adam had written in his scrapbook that the "*class is always peaceful*":

"Researcher: What do you think makes the classroom peaceful?
Adam: Well, it's not always that peaceful, because the people in our class can be quite excited
Lillian: Well, I wouldn't say peaceful, I'd say quiet…Mostly. The majority of the time.
Adam: Yeah, because sometimes it can get quite loud…because there's some people in our class who are really loud and we can't like concentrate with them"

Adam and Lillian, School D,
Phase 3 Scrapbook interview

Figure 8-23 Quiet area within corridor space outside classroom at School D, photo by James

"James: I like this area because it's quiet, and it's in front of our class
Researcher: Do you like learning in that bit?
James: Yeah, I find it easier…because when you are doing a test…there's not much noise there and you can concentrate more"

James, School D,
Phase 3 Focus group

Although much of the literature surrounding noise investigates the effects of noise on learning and human cognitive functioning (Higgins et al., 2005b p.18), the findings here, highlight the importance of children's desire for peaceful conditions for both learning and relaxation. Furthermore, children tended to allude to the feeling that quiet spaces can make them feel happier:

"Researcher: You have said you feel happy when you are in the quiet area, why is that?
Tanya: Because it's very quiet
Researcher: What do you think makes it quiet?
Tanya: On the playground, it's all – you go on the playground, to play, and stuff. If you want to sit down and you know, not really do anything, maybe just read a book or something, want to be a bit quiet then you would go in the quiet area…"

Tanya, School D,
Phase 3 Scrapbook review

The notion that quiet spaces (see Figures 8-25, 8-26 and 8-27 for examples) can make children feel happy, tended to be coupled with discussions around having relaxation time during their daily lives at school and having places to sit and chat or spaces for reading. Thus, this suggests the importance of having access to quiet spaces at school coupled with the associated positive impact on children's feelings and consequently, their well-being.

Figure 8-24 Field at School C, peaceful places to learn, photo by Lewis

"Researcher: Why is that the best place to learn in?
Lewis: 'Cus if it's not a classroom, then it's a lot more peaceful, 'cus it's outdoors and you can't really hear all the shouting and voices from the inside…you can learn more outside because it's a lot more peaceful"

Lewis, School C,
Phase 3 Scrapbook interview

Moreover, Barrett et al. (2016) propose, it is necessary to go beyond issues of comfort by considering the potential impact of environmental factors, such as noise, on health and well-being (Barrett et al., 2016, de Vrieze and Moll, 2017).

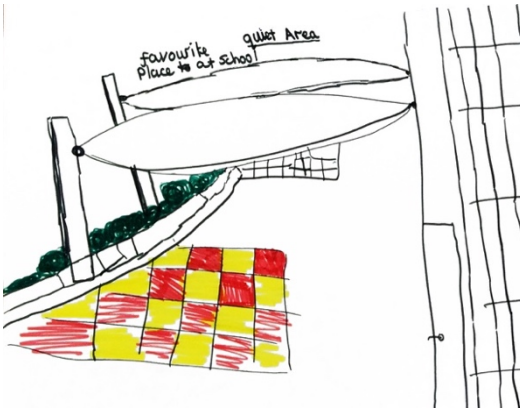

Figure 8-25 Drawing of quiet area outside classroom at School D by Robbie

Figure 8-26 Quiet area outside the classroom at School D, photo by Isla

Figure 8-27 Quiet area outside the classroom at School C, photo by Camille

8.5.2 Issues with lighting conditions

Children showed an **awareness of lighting conditions** in their classrooms and other spaces at school. It should be noted that issues concerning sunlight or lighting were raised the least in comparison to other environmental characteristics. However, the main issue for the children in the classrooms was related to glare, which could be in the forms of discomfort glare or disability glare, and in particular, this was with reference to the whiteboard or smartboards:

> *"Emma: …the projector, it doesn't really work properly. When it's a really sunny day like today, it's really hard to see what's on the screen…Serena: But it's mostly because the blinds are never shut*
> *Emma: It doesn't make a difference if we shut the blinds"*
>
> *Emma and Serena, School B,*
> *Phase 3 Scrapbook interviews*

This example could be classed as disability glare, where the children's vision of the smart board is impaired by excessive light. It is argued that good daylighting may have positive effects on children in the classroom, in terms of performance, achievement and general well-being (Heschong et al., 2002 p.101, Earthman, 2004 pp.34-36, Higgins et al., 2005b p.20) and Benya (2001 p.2) stressed the importance of responsible daylighting to minimise glare. During the observation, it was noted by the researcher that bright sunlight entering the classroom was at times problematic for some of the children, which seemed to be causing discomfort glare, where the bright light appeared to make it difficult to see the task, and this was mentioned by Leah in her scrapbook interview:

> *"Leah: The sunlight distracts me.*
> *Researcher: Does it?*
> *Leah: Yeah, it's really bright, it comes through the windows really bright*
> *Researcher: The windows or the skylights?*
> *Laura: The windows…it's horrible*
> *Leah: It's really shiny –*
>
> *Laura and Leah, School A,*
> *Phase 3 Scrapbook interview*

Issues with glare were also found by Barrett et al. (2016) in a study of teacher's views on their primary school classrooms, however, teachers felt this was lessened by the use of blinds. Children suggested that they sometimes have difficulty seeing the images on the whiteboard or smartboard screen, and as such, some children advocated the need for suitable blinds to provide shading in the classroom. However, at School D, for example, children suggested that the blinds were not necessarily fit for purpose:

> *"Adam: …the bad thing is that, we don't have anything to like block the sun from the, the smart board so it, when it's like that, it makes it so, we can't really see the board that well…Because it needs to be dark so the light can see*
> *Lillian: Yeah…so when we are like at the window, it directs to our faces so we can't look down and work and then when you close the blinds or close the windows, even the blinds, it goes through the blinds*
> *Adam: I think they need to be a bit thicker*
> *Lillian: The blinds?*
> *Adam: Yeah*
> *Lillian: Yeah, and a bit wider, I think*
> *Researcher: So do the blinds not cover the whole window?*
> *Lillian: No, not really, it's about 5 metres short, not metres, centimetres*
>
> *Adam and Lillian, School D,*
> *Phase 3 Scrapbook interviews*

The use of blinds and their effectiveness has been investigated, with mixed opinions. It was reported by Barrett et al. (2016 p.181) that teachers' satisfaction levels with their blinds were good. However, this is in contrast to an earlier study where 67% of participants felt blinds were poor (Barrett and Zhang, 2012 p.98). Moreover, the findings in this thesis suggest that glare (and the use of blinds) remains an issue for children in some classrooms. In a review of seventeen studies, dating back to the mid-1930s Jago and Tanner (1999) found a consensus that this can have an impact on their learning and ability to stay on-task in lessons (Schneider, 2002 p.6, Higgins et al., 2005b p.20).

8.5.3 Perceptions of thermal conditions

There was a common desire for access to 'fresh air' across all case study schools, in relation to both classrooms and the positive conditions of the external environment. The theme concerning the children's **desire for fresh air** is discussed Chapter 9, however, it could be seen to be related to thermal comfort and ventilation in some of the classrooms. Perceived issues relating to 'temperature' were discussed mainly at Schools A and D, although there was a lack of consensus between children in each school. Environmental control is a much researched and debated issue and its link to student learning. It has been argued that thermal comfort is one of the most significant attributes that can have an impact on children's achievement (Earthman, 2004) whilst differences between children and adults' perceptions on the matter have also been highlighted (Teli et al., 2013). At School D, it was raised by some children that their classroom was too warm although this was noted as specific to children who were based in the smallest classroom at the school[1]. Whereas, Tanya at School D, for example, thought that the classroom was the best place to learn because it was "*cold*":

"Because if it's too hot and stuffy, people will start moaning and stuff, but if it's just the right temperature, people will be like this is just the right temperature, it's just the right, learning temperature"

Tanya, School D, Phase 3 Scrapbook interview

Figure 8-28 Skylight in classroom at School A

"Researcher: So what is good about the spare classrooms?

Laura: It's nice and quiet

Leah: And it's not so warm [in the spare classroom], in the classroom it's red hot

Researcher: Is it?

Both: Yeah

Leah: It's really hot

Laura: And when you open the skylights it's too cold

Leah: And then we don't know what to do…we will have to leave it open, we normally leave the door open a bit"

Researcher: Do you tell your teacher when you are too hot?

Leah: Yeah, I say Miss can I open the skylights and ask her if I can shut them 'cus we are too cold…

Laura and Leah, School A,

Phase 3 Scrapbook interview

[1] The smallest classroom at School D was a space that had been converted to a classroom to provide additional classroom space. The space was previously intended to be used as a community room and as such, is smaller than the rest of the classrooms at the school.

At School A, the issue of the classrooms being too hot was raised in discussions relating to the operation of the electronic skylights in the classrooms. For example, Laura, at School A, suggested in her scrapbook that she liked to learn in the spare classroom and she revealed this was due the fact that the temperature was more preferable than the classroom; Figure 8-28. However, it is worth noting that there may be implications for children's perceptions of classroom temperature due to a lack of control of the skylights.

Barrett et al. (2015b) reported that as the temperature in a classroom rises, students suffer greater discomfort and this can affect attention span and task performance. The findings of this thesis suggest that some children were happy with the temperature of their classrooms whilst some children reported negative experiences. However, it remains that for those children finding the classroom environment uncomfortable, they could still be negatively affected and this may have an impact on learning efficiency (Wargocki and Wyon, 2007, Barrett et al., 2015b). At School D, Lillian and Adam discussed being too warm in the classroom and how they thought it affected them:

> *"Researcher: Does it affect you, when you are too warm in your classroom?*
> *Adam: Yeah, it makes us so we don't learn as good…we don't work as hard*
> *Lillian: And everybody's trying to get a drink*
> *Adam: Yeah*
> *Lillian: I suppose we could open the door but it doesn't make any difference"*
>
> *Adam and Lillian, School D,*
> *Phase 3 Scrapbook interview*

Factors such as user control (and automatic control) of windows, doors and skylights and potential differences in user preference can have an impact on perceived thermal comfort and should be taken into consideration. External conditions and the weather on any particular day can also have an impact on children's perceptions of classroom temperature. Nevertheless, it is important to note that, intentionally, there were no direct questions in the scrapbooks related to temperature in classrooms, therefore, the fact that this has been raised by the children, at two of the four schools, remains significant. Therefore, the issues raised overall, predominantly by the children at Schools A and D, suggest that there may be issues

with the thermal environment in some of these classrooms for children, although there may be individual differences. This further emphasises the need to study new school buildings, as this would require a longitudinal thermal comfort study to investigate the issues that remain.

8.5.4 Issues with smells

Related to the topic of adequate ventilation, issues with **smells** around school were occasionally raised, mainly regarding the toilets at school, as other opinion-based studies have found (Ghaziani, 2010, Burke and Grosvenor, 2015). "*Smelly toilets*" were discussed at School A at both the old school, during the pilot study, and then again at the new school; toilets in the new building at School A were open onto the corridor as opposed to the old school, where they were located through a lobby area with doors for separation. Toilets were also raised at School D, where this seemed to be affecting the classroom environment, due to shared toilets being located via doors directly off the classroom spaces. Tanya, at School D, suggested that the toilets could be improved in her scrapbook and wished to have air fresheners as the smells come into the classroom:

"Tanya: So we should have air fresheners and things…They block the toilets…on purpose. So you go in and it absolutely reeks…it sometimes goes under the door and then into our classroom, everywhere"

Tanya, School D,

Phase 3 Scrapbook interview

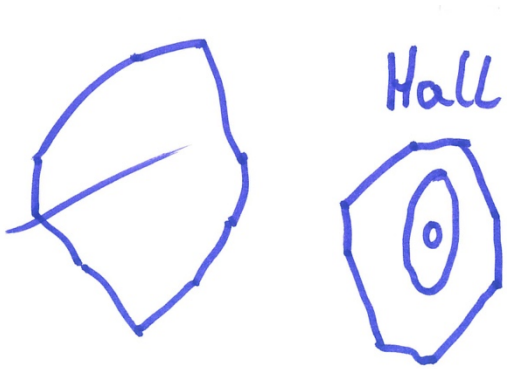

Figure 8-29 Scrapbook drawing of the hall at School D by Jamie

"I have drawn the hall because it's also a good place to learn because it's really big…And if you're a bit like hungry, and you are learning in the hall, you can smell the food or what's there. Because our dinner ladies will be making the, making and you can like tell what the dinner's going to be like. If it's nice or not"

Jamie, School C,

Phase 3 Scrapbook interview

Smells were also occasionally discussed in a positive light, food from the kitchen or dining hall were mentioned by some of the children as they enjoyed the smell of food from the school kitchen. For example; at School C Jamie described his drawing of the hall in scrapbook; Figure 8-29.

Smells were not discussed in as much detail or as often as some of the other topics related to environmental characteristics. Nevertheless, it is important to note positive and negative smells are noted by children. As newer primary schools now tend to locate toilets onto corridor spaces or accessed directly from classrooms, the issues raised concerning the smells from toilets in classroom spaces, in shared situations, is an area where further research could be conducted to assess the impact on children's experiences. Smells from the school kitchen may not be perceived in such a positive light by adults whereas children reported this as a positive sensory experience, highlighting the importance of gaining the children's perspectives on their school environments.

8.6 Tools for learning

Having the appropriate "*tools*" or equipment for learning was a matter raised by children in discussions about the classroom and good places to learn. Learning aids, such as **displays** and **technology**, were also linked to children's **needs and desires**. Such items that were considered by the children as the tools that helped them to learn included: technological facilities in the classroom; visual learning aids (e.g. in the form of displays); physical resources (e.g. books and thesauruses); and having equipment available on their tables. One child at School A described her classroom as the best place to learn in her scrapbook because you have "*got all the tools*", revealing in her interview that she was referring to "*pencils and things...rulers*". Furthermore, some tools were linked to motivation; at School B, Sadie wrote in her scrapbook that the best place to learn was the classroom because "*everything in the room makes you want to go from strength to strength and the displays encourage you to do more*". In addition, it was noted both during the observation sessions and by some of the children, that poor equipment or facilities can have an impact on learning experiences at school; for example, malfunctioning smartboards in the classroom causing issues and disruption in lessons.

8.6.1 Access to technology

Technology for both learning and leisure whilst at school emerged as a recurrent theme within the data. Children showed a strong desire to learn by interacting with technology. This could be due, in part, to the apparent "technologisation of childhood" as children have exposure to such a broad range of technologies in the home (Plowman et al., 2010 p.72). Having access to forms of technology at school was thought to be a very positive characteristic from the children's perspective. The availability of technology for teachers was proposed by Tanner (2000) as one of four key predictors of student achievement. Having access to laptops or iPads, learning in ICT rooms or the use of computers in the classrooms is widely the norm in schools today (Higgins et al., 2005b p.28). Items relating to technology were frequently photographed and discussed by the children during the data collection. Although the four case study schools had differing levels of access to computers and technology, it remained a common view from the children that technology facilitated the act of learning in many ways, also making learning "*more fun*"; for example, Kieran at School A, selected a photo of the ICT room (Figure 8-30) to discuss after the child-led tour and suggested in his scrapbook that the ICT room was another good place to learn:

"It's more fun and… 'Cus erm, we like go on Publisher and we make like letters and cards and stuff…and you can do programming games"

Kieran, School A, Phase 3 Scrapbook review

Figure 8-30 Photo of the ICT room at School A, by Kieran on child-led tour

"ICT suite is important because it helps you learn on electronic stuff…It's fun"

Kieran, School A,

Phase 2, Child-led tour

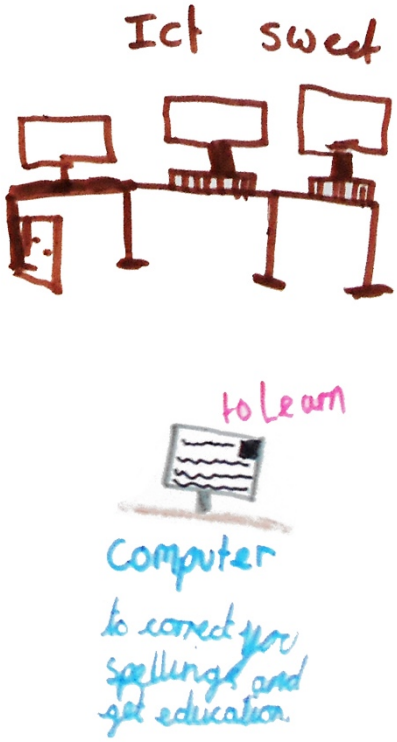

Figure 8-31 Drawings of the ICT suite and a computer by Cameron at School A

At School C, the ICT room was reconfigured and refurbished to be used as a standard classroom, due to lack of space in the school. Jamie did not like this and suggested bringing back this ICT room as a potential improvement to the school:

"We already had this space, but it got turned into Class 9. And I wasn't really happy with that. Because I liked the ICT room. Because, it was just where we, where everybody went…Because we had this person come in one day, and the ICT room is where we went. We did some exercises, then we did a game. We had to do some work then about something. I can't remember…Yeah, 'cus it was in the ICT room. There was lots of computers, near the walls, so we had to get in groups, because there wasn't enough though…"

Jamie, School C,
Phase 3 Scrapbook interview

Interactive whiteboards (IWB), or 'Smartboards', were used in the classrooms at all four case study schools, as is commonplace across the country (Woolner et al., 2007 p.60). Having suitable access to media and technology spaces has also been found important to children by Ghaziani (2012 p.135). However, it is argued that computer use can interfere with learning and cause a distraction (Woessmann and Fuchs, 2004 p.17). Furthermore, in high technology settings, it has been suggested that an inadequate physical learning environment can disrupt psychosocial harmony (in terms of student autonomy, cohesion, involvement, task orientation and co-operation), which in turn may

affect learning (Zandvliet and Straker, 2001). It has been highlighted in Chapter 6, that the IWBs were an important part of the classroom for the children which they felt assisted with their learning, whilst children also complained about technical issues during lessons. This has also been suggested by Yáñez and Coyle (2010), who revealed children's strong desire to interact more with the IWB, suggesting that children feel frustrated when technical issues occur. The reasons children felt the IWBs were important varied, including: the ability to see information visually on a large screen; being able to watch videos; and the interactivity in lessons. Notwithstanding that, children also felt that having technology was "*cool*"; Figures 8-31, 8-32 and 8-33.

"The interactive whiteboard, shows the children visually instead of just saying it, like so you can see what's actually happening"

Faith, School B,

Phase 3 Focus group

"…because it's interactive and you can touch on it and you can draw things on it, and if you have got a thing, you need to draw something, like explain something if you are a teacher, then you can draw like little lines or circles or stuff… So I think that's quite cool and you can also touch things on the board and if, say you have got a website on and you put it interactive thing on, you can click on something and it goes on it. But sometimes it fails"

Angela, School A,

Phase 3 Scrapbook focus group

Figure 8-32 Photo of interactive whiteboard selected for scrapbook by Faith at School B

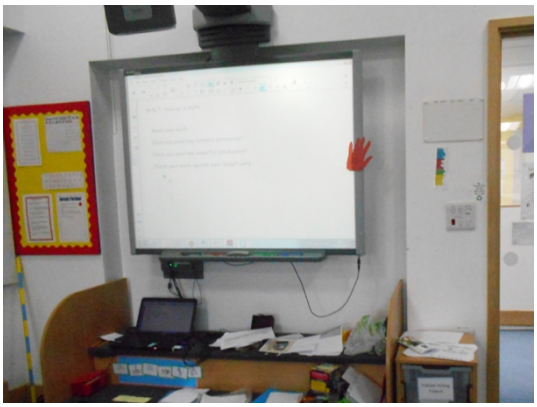

Figure 8-33 Photo of interactive whiteboard selected for scrapbook by Graeme at School D

"The whiteboard. So if you didn't have the whiteboard, you can't just look at a tiny little computer right there, so it connects to that massive whiteboard, and so everyone can see it, so you won't have to crowd around the little computer…from far away, like the end of the classroom, you can see it. From sitting on the chairs, and it's a much bigger screen, than it is on the computer"

Graeme, School D,

Phase 3 Focus group

This aligns with findings from Şad and Özhan (2012), who reported that pupils like being taught with the IWB for practical, economical, visual and motivational reasons and likewise, students disliked technical problems. It was clear from the observation, that the interactive smartboards impressively physically engage children in learning and most notably, during typically traditionally taught subjects such as Maths and English. Higgins et al. (2005b) suggest that the use of ICT equipment in the classroom should be "owned" (p. 29) by teachers and incorporated into their teaching practice effectively, adopting a critical and creative response to available software (Yáñez and Coyle, 2010). However, it is unclear from current research whether IWBs can have a positive and sustained impact on attainment (Higgins et al., 2005a, Higgins et al., 2007).

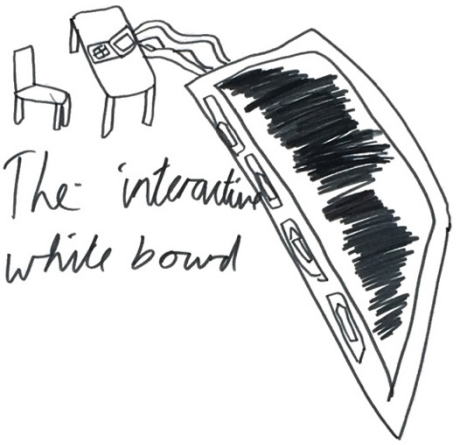

Figure 8-34 Drawing of the interactive whiteboard at School A, by Angela

Careful consideration of the siting of equipment and the layout of the space is required and planning how this can facilitate pedagogy is fundamental rather than using the IWBs as a 'bolt-on' (Smith et al., 2005). Due to the scale of this study and multi-faceted nature of learning process, it is impossible to determine whether the technology itself did indeed aid pupils learning. However, it remains that children's inherent love and attraction to technology can encourage interactivity and engagement, whilst influencing positive feelings in the classroom and elsewhere. Moreover, the use of IWBs can help students to develop positive learning attitudes and enjoyment of learning (Luo and Yang, 2016).

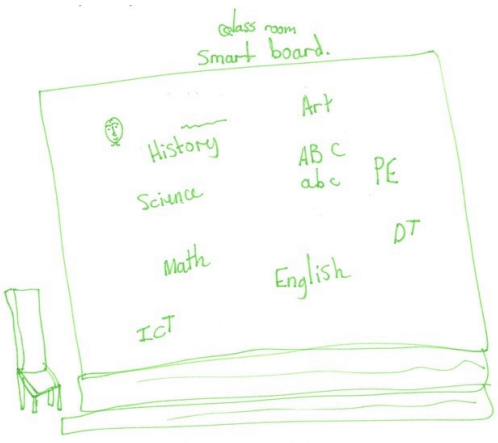

Figure 8-35 Scrapbook drawing of interactive whiteboard by Theo at School D

Technology was not merely considered useful for children in the learning context. Simply having access to 'new', advanced technologies available seemed to excite children as they spoke about the equipment with pride and suggested it was highly important:

> *"Well, the whiteboards, they are very good 'cus it's like really really like high tech technology and erm, Miss does like PowerPoints to show us erm, like work that she wants us to do for Maths and Topic and stuff"*
>
> *Lucas, School A,*
> *Phase 3 Scrapbook interview*

The children expressed a deep affinity for technology and the use of it at school. Regardless of the context or situation, the use of technology seemed to make children happier and evoke positive feelings whilst in the school environment. If children do see the use of technology as an exciting part of school, which can make learning more interesting and "fun", then perhaps it can encourage engagement. However, further research is needed to understand the impact that technology can have on engagement. Cleveland and Fisher (2014) note the trend towards creating education facilities which are rich in technological resources (JISC, 2006) and as such, suggest a deeper understanding needs to be attained of how effective learning environments are in supporting teaching and learning (Cleveland and Fisher, 2014). It is clear that the use of technology is very much embedded in children's day to day lives at school (and elsewhere), whether it forms part of a lesson or whether used at playtimes for leisure and rewards for good behaviour. The IWBs were the focal point of the classrooms or study areas and furniture layouts were based around use of this equipment in each of the case study schools. Thus, the layout of the classroom seems to be more led by the technology rather than advances in pedagogy (McCarter and Woolner, 2011). Furthermore, Radcliffe et al. (2009 p.11) propose that "there is a nexus between pedagogy, technology and the design of the learning space", proposing the Pedagogy-Space-Technology framework, advocating that learning spaces should be evaluated, as technology is a key element that is inextricably linked to pedagogy and space. Thus, the design of learning spaces, such as classrooms, should facilitate and optimise the integration of technology in pedagogical approaches.

8.6.2 Displays

Figure 8-36 Photo selected for scrapbook of the Rainforest room by Katie at School C

Figure 8-37 Photo of Poland display in the classroom chosen for scrapbook by Sophia at School A

"This is a display that we did [children laughing] I think it was last half term. That was ours because we did about Poland. Some of us coloured them in paint"

Sophia, School A,

Phase 3 Focus group

It has been outlined in Chapter 6 that displays, (on walls and physical objects) both in the classroom and around the school, were reported as positive characteristics in the school environment. The wall and physical displays, including children's work, art work, models and school achievements, were frequently photographed during the child-led tours and were also rated as important at each the schools, as noted in Chapter 6. Although displays were most popular at School C, they featured heavily in children's photographs across all four schools. Similarly, this has been found by others (Ghaziani, 2010 p.12, Maxwell, 2000 p.277), where children have been consulted on their views of the school environment, there has been agreement that displays make the school feel more welcoming (Maxwell, 2000), as discussed in Chapter 7. Moreover, within the classroom, displays were named in the scrapbooks as a good characteristic of the classrooms at Schools A, B and C (Table 6-6) and frequently photographed and discussed at School D. Children revealed that the displays were used as visual learning aids; for example, Austin at School B, described how the displays helped his understanding in lessons:

"Austin: Because there's different types of decorations and Miss A has sheets along the wall, to show like what things mean, like commas, and colons and all of the things like that.

Researcher: So when you say decorations, what do you mean by that?

Austin: Basically like, things with pictures, and the writing to show what it means. And the picture of the punctuation"

Austin, School B,

Phase 3 Scrapbook interview

Whilst displays in the classroom can be useful for the children as a learning aid, Fisher et al. (2014 p.1366) have reported that decorated classrooms for young children can lead to distraction and time spent off-task. Barrett et al. (2015b p.15) warn against over-stimulation for children, suggesting that a balance should be found, the visual environment of the classroom should be "neither chaotic not boring".

Children also expressed pride towards some of the displays, particularly towards work or art work which they had completed themselves, indicating that this holds some significance for the children, as has been noted by others (Ghaziani, 2010 p.12), enabling a sense of ownership over the space (Killeen et al., 2003 p.119, Barrett et al., 2015b). Displays also appeared to act as motivation for pupils to achieve and perform. For example, at School D, children discussed how they longed to have their artwork hung on the walls and as Graeme pointed out, school displays can provide inspiration and motivation; Figure 8-38. However,

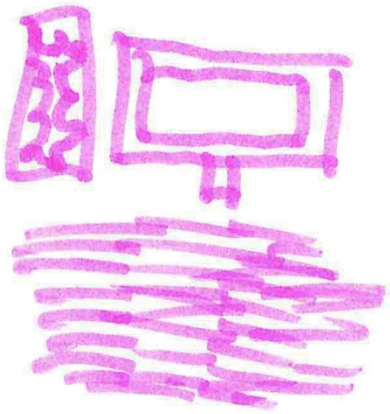

Figure 8-38 Scrapbook drawing of the whiteboard and a display in the classroom, by Graeme at School D

"That's the whiteboard and that's just a display…And the display, like, you want to look at other people's work, what they have done…So your parents can look at it and other people, and they give you inspiration sometimes. Yeah, sometimes, like if like, you have got a piece of work, well not necessarily you but someone else, and you think, I want to get my piece of work up there, you can try harder and make it go up there"

Graeme, School D,

Phase 3 Focus group

Figure 8-39 Photo of framed artwork chosen for scrapbook by Graeme at School D

frustrations were expressed with displays that were "*falling down*", perhaps making the classroom appear "cluttered" (Dudek, 2007 p.58, Woolner et al., 2007 p.59). Likewise, some displays were considered "*boring*" because they had not been updated recently, suggesting that children need more variation in the displays in classroom. Nevertheless, children's desire to have their work on display was evident across all four schools, during the child-led tours, seeing this as regonition for excellent work. By giving children a sense of responsibility (Hertzberger, 2008), where children begin to have a role in the aesthetics of their school, through the display of artwork, it may lead to an increased sense of ownership which may ultimately have a role in student engagement and motivation (Killeen et al., 2003) and enhancing young children's self-esteem (Maxwell and Chmielewski, 2008). Moreover, cues in the physical environment (Steg et al., 2012) can have powerful effects on children, as Maxwell and Chmielewski (2008) note, this can have an impact on their socio-emotional development and could also be linked to place identity in child-development. Therefore, the benefits of displaying children's work on classroom walls are more than merely practical use as learning aids, thus, it is important to consider the design of the visual classroom environment (Almeda et al., 2014).

8.7 Summary: Children's needs, wants and desires

This chapter has presented the thematic findings relating to desirable characteristics of the school environment, from the children's perspective. Several key characteristics have been discussed, including spatial and physical conditions of the classroom; alternative spaces to learn; perceived environmental conditions; and the tools children see as necessary for learning. Drawing on the analysis and triangulation across all phases of data, the findings have revealed that there are some notable issues apparent in new school buildings, whilst highlighting positive qualities that should also be considered in future school design.

The children's views on the classroom environment have been presented and it was apparent that there is a desire to feel safe and secure in the classrooms. Factors affecting this are the presence of teachers, being close to friends and feeling comfortable in the classroom. Physical and spatial characteristics of the classroom have been discussed in terms of having enough space, the classroom layout and visual displays, the comfort of furniture and the use of technological equipment.

Having enough space in the classroom was important for children, both practically, in terms of circulation and at their tables, and visually, in terms of the relative appearance of the space. The appearance of a space being larger, may positively affect children's feelings (Langhout, 2004), reducing the notion of feeling cramped. In addition, the layout of classroom furniture could also facilitate this (Higgins et al., 2005b), as children reported issues with circulation in some classrooms and lack of visibility of the displays. However, social density could also be a factor related to children feeling cramped in the classroom. Spatial density and social density can affect children's perspectives on the classroom which may affect how comfortable they feel in the environment (Darmody and Smyth, 2012). This may ultimately have an impact on well-being (Finn et al., 2003), whilst there is potential it may also affect engagement.

Having access to views was desired by children, being able to see outside and to look at areas of the natural environment were reported as positive characteristics of the classrooms; thus, maintaining views to nature remains important, as argued by others (Heschong and Mahone, 2003, Dutt, 2012, Ghaziani, 2012). These findings

highlighted the importance of the micro scale environment of the classroom (or separate learning spaces) and its effects on children's comfort and feelings of safety and security (Maxwell, 2003), suggesting that minute details, such as some of the factors presented, should be considered when designing learning spaces.

Alternative spaces to learn have been discussed and were widely liked by children. Hub spaces, break out spaces, libraries, ICT rooms and outdoor classrooms can provide suitable learning conditions for children, away from the classroom. Therefore, spatial variety and flexibility of spaces was seen as a positive characteristic of new school buildings, by the children. Children also thought having multiple areas in which to learn was beneficial. Positive factors of alternative learning spaces included: quiet conditions, improved concentration, having more space, the ability to work in smaller groups, the use of technology and with regard to external spaces, the access to fresh air was desirable. This suggests that a variety of different learning spaces work well for children and further research could be conducted to understand the impact of these specific spaces on children's engagement and performance, as opposed to only focusing on a single element; the classroom.

The findings relating to environmental conditions show that there were some perceived issues with regard to acoustics, lighting, thermal comfort and ventilation in classroom spaces. Additionally, children have reported issues with shared toilets between classrooms in terms of sound transmission and smells in classrooms. The benefits of group rooms and alternative spaces to learn, which provide quieter acoustic conditions, have been indicated by the children. It remains there are issues with forms of glare on IWBs in the classrooms and the inadequate use of blinds was raised by some of the children. Children expressed a desire for fresh air, suggesting also that their classrooms can be too warm and stuffy. However, some children reported that their classroom temperature was sufficient. Temperature control and regulation is somewhat affected by user preference and perception (Teli et al., 2013) and tolerance levels; for example, the use of skylights at School A and the temperature changes in the classrooms was one of the most contentious issues amongst children.

Finally, children expressed a need to '*have all the tools for learning*' which included access to technology, displays and general equipment in the classroom. The IWBs were regarded as highly important by the children but whether this and other technology at school are efficient learning aids (Higgins et al., 2005a) or merely a distraction (Woessmann and Fuchs, 2004) is unclear. It is evident though, that children's attraction to technology and strong desire to use IWBs, as also found by others (Yáñez and Coyle, 2010, Şad and Özhan, 2012), does excite them and children believe it helps them to learn, encouraging positive learning attitudes (Luo and Yang, 2016). This belief could potentially inspire engagement in itself, however, further research is needed to investigate this and determine the effects of technological facilities on learning. Equally, children suggested that wall displays help them to learn and children were motivated by the opportunity for their work to be displayed. Furthermore, it has been revealed that displays can provide much more than this, in addition to being motivational for the children, displays can foster a sense of pride and ownership (Killeen et al., 2003, Barrett et al., 2015b). Children's displays have been linked to children's self-esteem and further research in this area could provide insights into how the physical classroom environment might impact on place identity (Maxwell and Chmielewski, 2008).

This chapter has highlighted many of the positive and desirable characteristics, present in the case study schools, relating to physical and spatial characteristics, environmental conditions and the tools children have access to for learning. The factors raised have also been discussed in terms of how they might affect children at school and their potential impact on children's general well-being. However, some concerns have also been revealed, that are perhaps not necessarily new or surprising findings in the area of school environments research. Nevertheless, the findings contribute to the existing body of research, by revealing insights into new school buildings, identifying that there are still issues that should be addressed in future research and school design. The findings have shown that further research and evaluation of our newer school buildings should be carried out to uncover the impact on the users, in order to address the remaining issues in future. The following chapter broadens the discussion and presents further desirable characteristics raised by the children, concerned with the use of the external environment at school.

Chapter 9

The external school environment

"we like to be surrounded by nature it's more interesting than the classrooms"

Focus Group, School C

9 The External School Environment

9.1 Introduction

The aim of this chapter is to discuss the findings related to the external school environment. The importance of the external environment to children has already been raised in Chapter 6 in the presentation of the preliminary findings. When undertaking the process of axial coding, the external environment was originally linked to the environmental conditions category. However, the number of sub-themes relating to the external environment were substantial and therefore, it materialised as a major topic with key findings. Thus, these themes form the basis of the discussion in this chapter. Many of the themes presented in Chapters 7 and 8 are also related to the themes underpinning this chapter, key topics to be discussed include: places for learning, and children's affinity with learning outdoors; and places for play, and children's needs in the environment. Themes concerning the natural environment and physical man-made environment are interlaced in each of the aforementioned sections. A summative analysis is presented using direct quotations from the children (anonymised) with photographs and drawings where appropriate, as in the previous chapters.

9.2 Thematic overview

As with the other major themes in previous chapters, the themes associated with external environment characteristics were multi-layered and inter-related concepts. Key themes of places for play, the natural environment and places for learning are presented in this chapter. Children's needs and desires were fulfilled by certain elements of the external environment and this impacted on children's feelings and experiences at school. Figure 9-1 provides an indication of the hierarchy of coding generated from NVivo software, which suggests the coding frequency for the main codes, that led to the development of themes (refer to Appendix H for additional diagrams). Figure 9-2 outlines the key themes and associated sub-themes that form the discussion in this chapter. Figure 9-3 presents the dynamic relationships between themes.

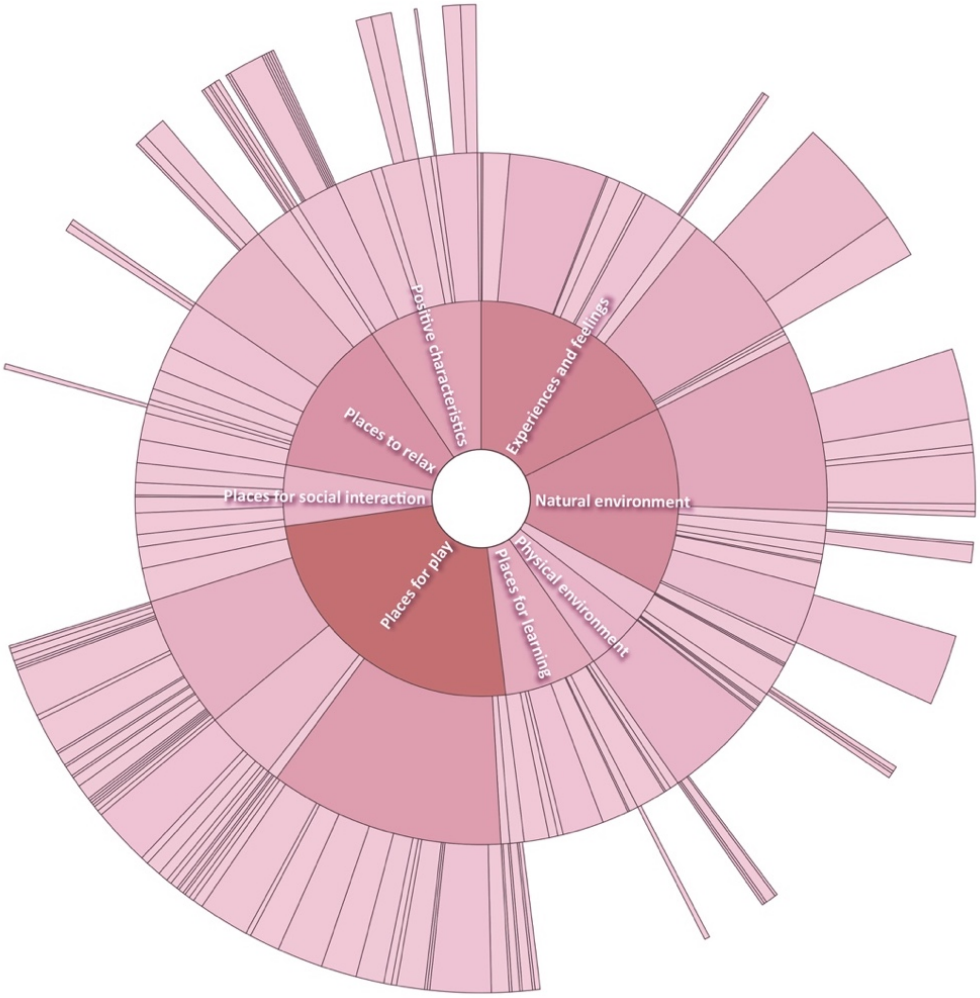

Figure 9-1 Coding hierarchy rose relating to characteristics of the external environment as identified by the children

This rose shows a selection of the codes developed during the data analysis process that were related to the external school environment and led to the final set of themes identified in Figure 9-2. The variation in colour tone represents the amount of coding references and the segments are sized by number of sources that have been coded.

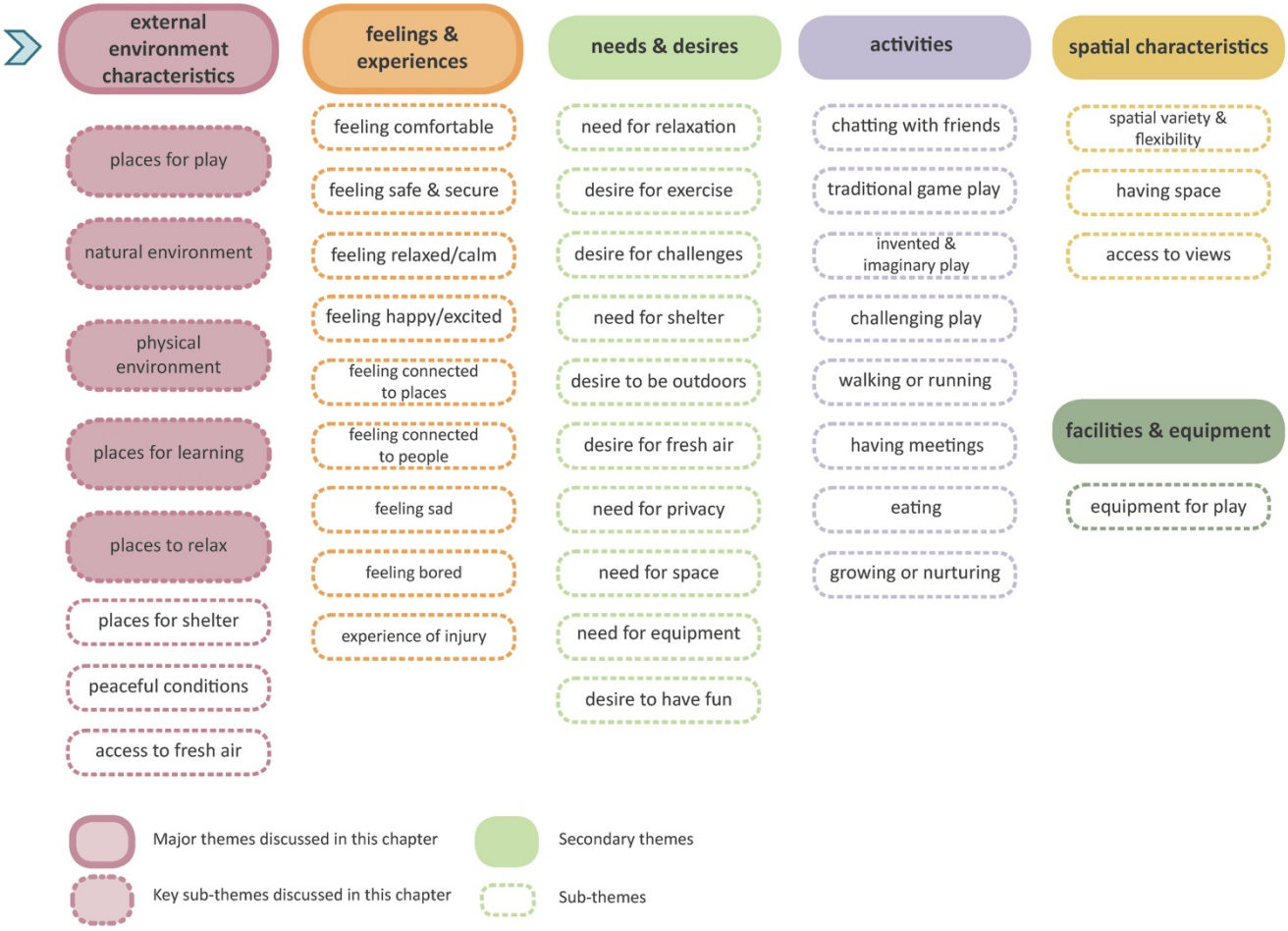

Figure 9-2 Summary of themes relating to the external environment as identified by the children and discussed in this chapter

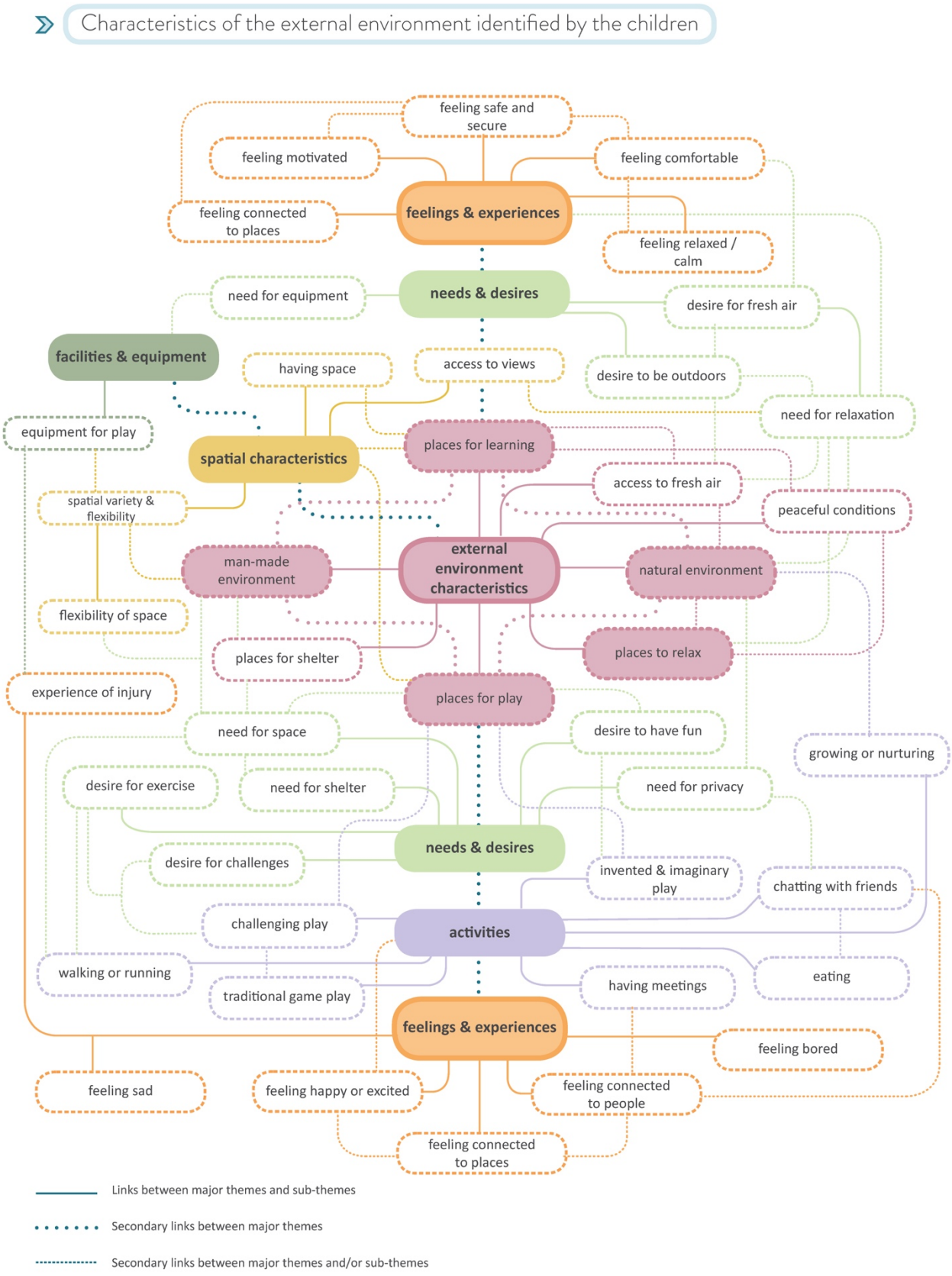

Figure 9-3 Summary of the inter-connected themes that emerged from data analysis, relating to the external environment, highlighting the multiple relationships between themes

Note: The diagram shows the complex web of relationships between themes. Connections indicated are not exhaustive as many of the themes are connected to multiple factors

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9.3 Places for learning

Figure 9-4 Fire lighting area, photo taken by Josie, School A

"It's fun to learn outdoors – you get to grill popcorn over the fire and it's really fun. It would be really fun to have more lessons outside. But we don't. I've not been yet, I think that was the camp"

Josie, School A,

Phase 2 Child-led tour

9.3.1 An affinity for learning outdoors

In Chapter 6 it was revealed that children liked to learn outside across all four schools. This is interesting because the schools outdoor learning facilities varied, however, children had referred to "*outside*", in the general sense, as being a good place to learn, regardless of the facilities available. During the data collection, children recounted very positively about learning outdoors in and around the school grounds and in natural settings. The findings are in line with evidence provided by OFSTED (2008), suggesting that children enjoy working away from a classroom as they find it "*fun*", "*exciting*", "*motivating* and "*refreshing*". Faith, at School B, explained why she thought learning outside motivates the children:

"*Because they are not stuck in a classroom. 'Cus when you are in a classroom you are always like, oh I can't be bothered with it, but when you are outside it's something different"*

Faith, School B

Phase 3 Scrapbook Interview

Children discussed learning in various areas of the school grounds including: designated outdoor learning spaces; for example, willow tunnels and outdoor classrooms, and also the natural environment; for example, trees, pond areas and plants. Reasons why learning outside was considered desirable, included: **environmental conditions** and **physical qualities** of spaces;

learning in **context;** and children's general affinity to **natural environments**. For example, at School A, the Forest Schools programme (see Chapter 3) had recently been introduced and children had been learning how to build fires; Figure 9-4.

The potential benefits of children's contact with the outdoors are widely suggested, including: improvements in attention, forming a sense of well-being, improving self-esteem, personal and social communication skills (Mirchandani and Wright, 2015). However, despite discovering children's attraction to learning in outdoor spaces, it also became apparent that this is something that is not necessarily a regular occurrence, perhaps suggesting that the teachers were not maximising the use of outdoor spaces at the case study schools. Some children suggested they would like to do more lessons outside, whilst others referred to memories of outdoor learning when they were in the younger years at school:

> *"Sometimes when we were a bit younger, we used to go in there [the willow tunnel] when we were reading books. But sometimes now, we just go in there, on special occasions, when it's really nice. So then when we are doing a lesson, and we need some space, some people can go into the outdoor classroom"*
>
> *Annabelle, School D,*
> *Phase3 Scrapbook Interview*

The value of experiencing outdoor and natural environments for children has been promoted for many years (Cobb, 1959, Adams, 1990, Rivkin, 2000). Nevertheless, children are spending less and less time outdoors due to increased use of technology and changing lifestyles (Simmons, 1993, Ghaziani, 2012). Therefore, children's desire to make more of school grounds for learning is encouraging. However, this requires teachers to effectively integrate outdoor learning into their pedagogy. School grounds need to provide adequate spaces to facilitate this and, it has been argued that, similarly to providing adequate environmental conditions in the classroom, providing better quality external spaces at schools can increase the potential they will get used, which in turn may enhance the quality of the educational experience for children (Adams, 1990).

The findings suggest that the external environment was important for children, as indicated in Chapter 6. There were more photographs taken of external areas compared to internal spaces and this was confirmed in the photo rating survey with many external spaces being rated as both liked and important. However, in a study by Ghaziani (2012), where questionnaires were given to pupils in both new and old school buildings, 'nature and outdoors' was found to be one of the least important categories relating to the school environment, for children. Although, there may have been other variables impacting on these findings, it raises the question in relation to this thesis: why was the external environment important to children at the case study schools? And why did they like to learn outside? It was suggested by the children that outdoor or natural settings provide suitable **environmental conditions** for learning, where children felt comfortable and relaxed. It was also indicated by some children that learning outside was more fun and even motivating. For example, where physical man-made structures such as outdoor classrooms were discussed, the positive environmental qualities that were reported included: spaces being shaded, providing fresh air and providing space to relax. Robbie, at School D, explained why he likes to learn in the outdoor classroom:

> *"I like to do it in the outside classroom because, if it's a really nice day and stuff, you have got like, the sun shining through which is a really nice feeling, 'cus you are warm and then you have also got the air which is nice as well. 'Cus sometimes when you are in the classroom you are like phrrrr [blows air], like that because you are really warm and haven't got any air"*
>
> *Robbie, School D,*
> *Phase 3 Scrapbook interview*

Children's **desire for fresh air** was introduced in Chapter 8, as children discussed how they felt they needed fresh air after spending time in the classroom. This was an inherent quality of outdoor learning spaces and a key reason why children liked learning outside; Figure 9-5. Some children also believed that spending time outside had positive health benefits, Angela, at School A, suggested that she thought the best place to learn was "*outside*" because you can get fresh air and Vitamin D:

"It's good to have fresh air, and it's good to have Vitamin D because if you don't have Vitamin D then your bones will become weak and they will break easily…to go outside so you can get your bones strong and get more fresh air"

Angela, School A

Phase 3 Scrapbook review

Figure 9-5 Outdoor classroom, photo taken by Lillian at School D

"Researcher: The outdoor classroom is another place you like to learn? So why do you like to learn in there?

Lillian: Because, it's like a classroom but it's smaller and it's outdoor you can get some air…

Researcher: Why is this one good to learn in if it's smaller?

Lillian: The outdoor classroom? Because it's outside and you can get some air. Say it was summer like now…"

Lillian, School D,

Phase 3 Scrapbook interview

Furthermore, children enjoyed physical education lessons outside and "*getting more exercise*". Some of the responses relating to health benefits may be influenced by children being taught about 'healthy living' at schools or external children's clubs. There was evidence at all schools to suggest physical activity, healthy eating, growing food, were encouraged and these are all aspects of the 'Health for Life' programme in primary schools (S4E, 2017). This suggests that the children are aware of issues surrounding health from an early age and it is positive that this may encourage their desire to spend time outside. Spending time

outdoors, in natural environments, can not only improve fitness (Foster, 2007) but is also linked to improving sensory development (Moore, 1993) and cognitive ability (Wells and Evans, 2003). Furthermore, Kaplan and Kaplan (1989) have long explored the benefits of the natural environment and propose that it is restorative, replenishing attention after mental fatigue (Kelz et al., 2015).

Children's desire for fresh air can also be related to other themes in the data, as it provided conditions which made children **feel comfortable**, **feel safe and secure** and harnessed their need for **relaxation**. Areas of the natural environment were thought to have this effect, and were referred to by children as good places to learn due to perceived positive environmental conditions. Jamie, at School C, indicated that the pond was a good place to learn due to its **calm and peaceful** atmosphere; Figure 9-6. Similarly, it has been argued that the natural environment can provide a sense of freedom (Dutt, 2012), feelings of timelessness (White and Stoecklin, 1998) and positive experiences of solitude (Long and Averill, 2003).

Moreover, children reported how physical attributes of the natural environment heightened feelings of comfort for them. For example, Annabelle, at School D, described why she thought the willow tunnel was one of the best places to learn (and also the best place to play); Figure 9-7.

Figure 9-6 Pond area, photo taken by Shaun at School C

"Yeah. It's calm because you have to be quiet around there…'cus erm, the ducks, we don't want to scare them away, and the frogs, no not the frogs, the fishes, they have really good hearing, so that's why we have to be quiet. That's why it's a good place to learn 'cus it's really quiet"

Jamie, School C,
Phase 3 Scrapbook interview

Annabelle's thoughts about the willow tunnel, Figure 9-8, highlight the sensory nature of spending time in the natural environment, which can encourage feelings of relaxation whilst learning in the willow tunnel. Children in natural environments tend to engage all of their senses (Titman, 1994), enabling moments of joy (Dutt, 2012) and the findings suggest that this nurtures feelings of comfort and contentment. On discussing her photo of the willow tunnel, Annabelle explained that it is important because "*we can learn in it and it makes our environment more important*", alluding to the fact she could learn about the natural environment from being located in the willow tunnel. As Annabelle notes, the natural environment can play a significant role in children's learning and this was evidenced extensively in the data, which is discussed in the section that follows.

Figure 9-7 Annabelle's scrapbook drawing of the willow tunnel

"I like sitting on the grass. In the first place, because there's like big leaves coming off it…and they like, hug you. Like the leaves are hugging me, it's a blanket. And it's nice and comfortable"

Annabelle, School D,

Phase 3 Scrapbook interview

Figure 9-8 Willow tunnel at School D, photo taken by Annabelle

9.3.2 Role of the natural environment in learning

In addition to the findings relating to the positive environmental and physical conditions of outdoor learning spaces, the **natural environment** itself, can play a significant role in building upon children's learning within their daily experiences at school and developing their environmental awareness.

Outdoor learning activities such as gardening and watching wildlife were popular with children across all schools and in relation to the Forest Schools curriculum at School A, den building and fire lighting were discussed. Furthermore, some children seemed aware of the potential for learning in areas of natural environment:

"On the field, it's good to learn because there's a lot of things to learn about. You can learn about insects, how the trees grow, the farm animals…The pond is good, because we have ducks now"

Jamie, School C,
Phase 3 Scrapbook interview

First-hand experiences are known to make topics more interesting, enhancing children's understanding whilst developing personal and social skills (OFSTED, 2008). As previously mentioned, the Forest Schools curriculum was recently implemented at School A[1], and as such, the area for fire lighting (Figure 9-9), within the

Figure 9-9 Fire lighting area, photo taken by Simon at School A

"I took this picture because…when you are in Forest School you get to build a fire…you get to cook marshmallows, toast and hot chocolate…It's a lot different to the classroom because you get to learn about different things like nature. And different dangers what can happen like when you are outside"

Simon, School A,
Phase 2 Child-led tour

[1] The Forest School curriculum was implemented at the other case study schools; however, this was talked about by children less frequently. It should be considered that at School A, in addition to this being a 'new' lesson for the children, the activities were based predominantly within the school grounds, as well as in a forest. Whereas at the other schools, where the Forest School was mentioned, children were taken to the forest for the activities.

school allotments, was photographed frequently during the child-led tours. However, as the curriculum was still new to the children, this could have affected their views and might explain why children were drawn to this area; similarly to the 'halo effect' (Thorndike, 1920) alluded to in Chapter 7, where something 'new' can have an impact on overall perceptions. Nonetheless, it remains that children at all four schools were aware of their learning in outdoor spaces.

Classroom gardens and allotment areas were raised as being important places in school grounds, where children could learn how to grow vegetables and plants and then watch them grow; Figure 9-10. Brkovic et al. (2015) found that garden areas were a valuable educational resource where children were able to learn and socialise. Furthermore, within the data of this thesis, it was apparent that children felt a sense of ownership over their plants they were tending to, taking responsibility for their environment (Titman, 1994). Therefore, areas of the natural environment appeared to influence attitudes and behaviours and children expressed a need to nurture and care for the natural environment and wildlife, comparable to findings by Adams (1990).

It has been alluded to by some children that being located in the natural context helped them when learning about aspects relating to the environment:

Figure 9-10 Allotment area, photo taken by Simon, School A

"That's important because we need to grow some vegetables instead of wasting money at the shops, buying food and we want to grow our own vegetables"

Simon, School A,

Phase 3 Focus group

Figure 9-11 Pond area, taken by Annabelle at School D

"The pond…I like the pond because…That's a hard one, I just like everything about the pond. It's really nice how you can just look into the pond and see all the different creatures in there. And at the side, I think it has like benches you can sit on…when I was in 1C, I went into there and did something about the pond. We did some learning in there and then a couple of weeks ago, we went to the pond and did some learning as well, about habitats. And I just think it's a really good place to learn"

Annabelle, School D,

Phase 2 Child-led tour

"Yeah, because it's like, I think it makes you think more about the stuff. Like if you were doing a topic about habitats and stuff, if you look around you, you can see quite a lot of habitats and stuff so it's kind of like making you think more"

Robbie, School D,

Phase 3 Scrapbook interview

As Waite et al. (2016) suggest, the environmental context plays a significant role in 'outdoor learning'. Pond areas can be found at three of the case study schools, they were well photographed on the child-led tours and rated as important at Schools B and D in the photo rating survey (see Chapter 6). Additionally, at School C, there was a school farm located towards the rear of the playground area on the field which was well documented in photos and discussions. Children discussed how they learnt about the farm animals and their feeding needs and stressed their disappointment at the school farm being removed in preparation for the installation of the new classroom[1]. Annabelle, at School D, discussed why she liked the pond area, highlighting the potential of the natural environment as a learning medium; Figure 9-11. Malone and Tranter (2003b p.300) posed the rhetorical question: "*Why learn about frogs from a book or a computer screen when you could watch them growing by day during class time and in your play, in a pond in the school ground?!*", arguing that allowing children to experience the

[1] During the course of the research, the animals at the farm (School C) were relocated elsewhere and the farm area was left empty to allow for the construction of the new prefabricated classroom on the field.

natural world themselves is linked to environmental cognition. Moreover, the findings seem to indicate that where children are able to explore natural habitats it can stimulate interest and motivation (O'Brien and Murray, 2007, Waite et al., 2016). Furthermore, O'Brien and Murray (2007) note that first hand experiences in natural contexts employ all of the senses, promoting enjoyment and this in turn, can positively affect motivation.

The potential value of the natural environment, as a learning aid in both a formal outdoor lesson or during children's day to day interactions in school, is considerable, and the findings have suggested that children wished to learn outside more often. Children's unique connection with natural environment has been recognised for many years as they have intimate ways of understanding and interacting with the natural world (Malone and Tranter, 2003b). Children's **affinity to nature** was a strong theme which emerged within the data across all four schools, however, most notably at School B, where there is the larger expanse of 'wild' areas. During the child-led tours at School B, children, on 4 out of the 7 tours, took the researcher to the wild area to the rear of the school field and spent considerable time photographing the area. Ella and Amelia, at School B, were particularly fond of the bug hotel and hedgehog houses (Figures 9-12, 9-13 and 9-14):

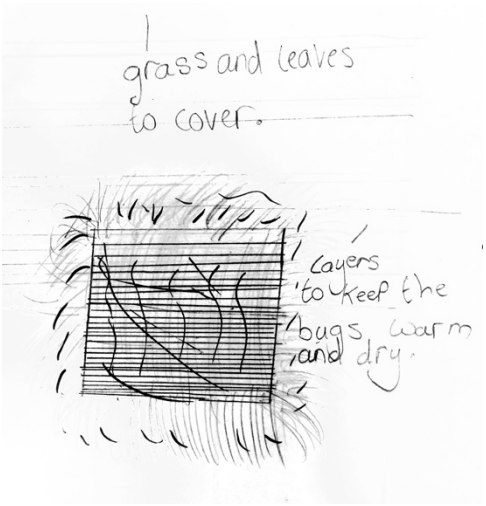

Figure 9-12 Drawing of the Bug Hotel at School B, photo taken by Ella

Figure 9-13 The Bug Hotel at School B, photo taken by Amelia

Figure 9-14 The Hedgehog House at School B, photo taken by Ella

"That's the bug hotel on the field…it's where the bugs sleep and stuff…the bug hotel is [a favourite place] because I like bugs and I think it's nice the school have made a hotel for them so they can be nice and warm and have a nice time in there"

Ella, School B

Phase 3 Scrapbook interview

Opportunities to learn in the outdoors are plentiful and the outdoor school landscape can provide more than merely lessons in the sunshine (Mirchandani and Wright, 2015). As OFSTED concluded in their report, 'Learning Outside the Classroom: How Far Should You Go?', learning outside the classroom can have significant benefits: improving children's personal, social and emotional development and raising achievement (OFSTED, 2008, Mirchandani and Wright, 2015). Likewise, research suggests that having access to natural environments could improve academic achievement (Heschong and Mahone, 2003, Williams and Dixon, 2013), whilst school 'greenness' has been linked to health and well-being, reducing physiological stress and enhancing psychological comfort (Kelz et al., 2015). Additionally, it has been suggested that school greenness may impact on health through its perceived restorative qualities (Akpinar, 2016). Moreover, the external school environment can have significant impact on children's perceptions of the total school environment, as this 'hidden curriculum' (Titman, 1994) conveys messages that children can identify with, promoting a sense of care, ownership and pride and developing a sense of place (Adams, 1990).

9.4 Places for play and social interaction

9.4.1 A need for space, variety and sense of freedom

Comparably, to the interior school environment, children expressed a **need for adequate space** and **variety**, in the external environment, for **play**, **physical activity** and **relaxation**. Having access to a wide range of sports facilities and variety of spatial opportunities for play, seemed to have a positive impact on children's daily lives at school and promoted social interaction. For example, the increased space at the newest school, School A, appeared to facilitate new activities for the children. Lucas and Josie discussed playing their new game, "*Zombie Bulldog*", in the playground, explaining that they made the game up since coming to the new school "*because we have a bigger playground*". Likewise, children at School B appreciated their extensive facilities. Sadie explained several photos of the playgrounds which she had chosen for her scrapbook; Figure 9-15 and 9-16. Having multiple places to use at playtimes was seen as a positive characteristic by the children. Variety and opportunity in play spaces allowed children to explore their environment and facilitated different forms of play. Adams (1990) proposed that school grounds provide a wealth of stimulation and resource for learning whilst it has been argued that the opportunity to explore rich and varied environments is also linked to cognitive and social development (Weinstein and David, 1987).

Figure 9-15 Foundation playground, scrapbook photo chosen by Sadie, School B

Figure 9-16 Adventure playground, scrapbook photo chosen by Sadie, School B

"These are pictures of like different playgrounds, and these are good because all of the playgrounds are here and like you can run around can't you, you see loads of children running around. And they are really fun to go on…there's so many pitches, it's about – in the whole school there's about 8 to 10 pitches…which is really good"

Sadie, School B,
Phase 3 Focus group

Having a variety of facilities seemed to foster an appreciation of the school, adding to children's positive perceptions of the school generally. Leah, at School A, explained her photo of the playground, Figure 9-17, in her scrapbook. She indicates that this makes the school "*cool*", in her eyes, and suggests that she feels "*lucky*" to have the facilities at school. This gratefulness for available facilities seems to heighten the sense of pride in the school. It has been argued that the appearance of school grounds can affect children's feelings (Titman, 1994). As Adams (1990) suggests, quality of the external school landscape is important, and the more enticing it is, the more it will be used and enjoyed and thus enhances learning experiences. Additionally, appreciation for the facilities and spaces at school can impact on their perceptions of the holistic school (Edgerton et al., 2011), as discussed in Chapter 7. In a similar way to the size of the school having a positive effect in forming the school's identity and status (Halford, 2008), the extent and quality of the facilities are closely related to behaviours, thoughts and social interactions (Durán-Narucki, 2011) and therefore could be seen to affect children's positive feelings about school, as a complete entity (Titman, 1994).

Figure 9-17 Playground at School A, photo taken by Leah

"This is a picture of the main playground. This tells you, you have a cool school…because we have got like, concrete, a basketball pitch, we have got some crops growing up there, some grass, trees growing, and to me, that's lucky"

Leah, School A,
Phase 3 Focus Group

Moreover, having large areas of open space was referred to positively by children, suggesting that expanses of open space encouraged **feelings of freedom**. It has been reported that children's attraction to large or open space can become a facilitator of positive feelings about school

(Langhout, 2004). For example, Angela at School A, wrote in her scrapbook that the field was her favourite outdoor area because "*just looking at it makes you feel all the freedom"* and Lillian, at School D, explained that the playground was important because *"you can be free and it's a big area to play and be in, and it's very spacious, there is lots of space".* A desire for this 'sense of freedom' was also found by Dutt (2012), in relation to having access to natural spaces through both physical engagement with areas of the school site and views from windows. In terms of what the children desired freedom from, the findings were similar to those of Dutt (2012), types of freedom included: freedom from work (in the classroom) as well as freedom relating to experiences, such as solitude and imagination.

Broadening this sense of freedom, children's desire for fresh air could also be linked to this as it allowed children to be free from the classroom environment at playtimes. For example, Laura, at School A, suggested that the playground was her favourite outdoor area in her scrapbook "*because you can get some fresh air*" and Tanya, at School D, suggested playtime was good to get some "*fresh air and re-start your brain*", whilst Layla, at School B, suggested she feels happy in the adventure playground because she feels free in the "open air"; Figure 9-18. Therefore, the sense of freedom could be linked to the experience of getting fresh air and the adventure playground seems to facilitate this, allowing children to 'let off steam' (Titman, 1994, Malone and Tranter, 2003b).

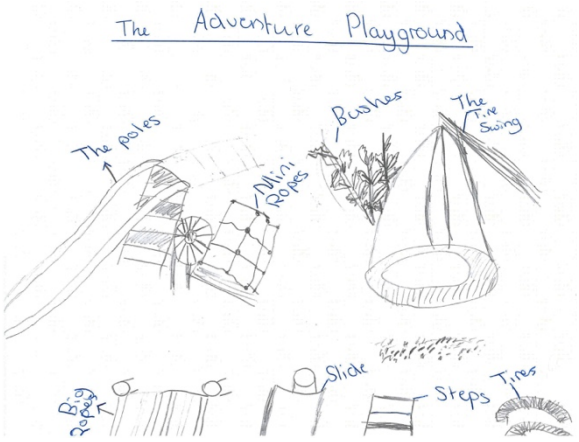

Figure 9-18 Adventure playground drawing at School B, by Layla

"I feel free in the adventure playground, because as I said, it's a place where you can take a break from the learning that you have just been doing, so when I am allowed outside onto the adventure playground it makes me feel nice and free 'cus it's an outside space and it's in the open air, where you can just get a couple of breathers and when playtime has finished, you just go back and you are ready for learning"

Layla, School B

Phase 3 Scrapbook interview

Additionally, children sought places where they could find shade and shelter from the weather. Places for shelter were desired in both areas of the natural environment and man-made structures, including: outdoor classrooms, designated quiet areas, willow tunnels and trees or shrubbery.

9.4.2 Places to play

In Chapter 6, it was evident that children frequently photographed and produced drawings of playgrounds and sports facilities. Moreover, **playgrounds, football pitches and the school field** were rated as some of the most liked and important external spaces at all four schools.

These spaces were often referred to by children as places which allowed them to be physically active. The desire for **exercise** emerged as an important issue for children at all four schools and children alluded to various ways in which the physical environment gave them opportunities to do this. Jenna, at School B, explained why the adventure playground was important and good for exercise; Figures 9-19 and 9-20. It was evident that elements in the adventure playground stimulated children to become physically active.

Children generally spoke excitedly and fondly about sports facilities and play equipment, suggesting that these facilities may have positive effects on children's mood as they were seen as 'fun' places at school. Similarly, places such as the multi-use games area at School C, football pitches and trim trails, were all important places. Children

Figure 9-19 Adventure playground taken by Jenna, School B

Figure 9-20 Adventure playground taken by Jenna, School B

"Because, like, if you like just finished a lesson, you really wanna go and stretch and run around and do stuff on the adventure. So that's really good that it's lots of space and you can – it's kind of like involving strength, the monkey bars, because you have to hold your own weight"

Jenna, School B

Phase 3 Scrapbook interview

frequently expressed their desire for physical challenges and discussed how such facilities enabled them to have fun at school. Research has shown that children have a preference for challenging playground spaces (Fjørtoft and Sageie, 2000, Malone and Tranter, 2003b). Children seemed generally very aware of the health benefits associated with exercise, as has been noted; Angela, at School A, recognised the need for physical exercise and the negative impacts on health associated with sedentary lifestyles:

"…you are just spending the whole day inside our classroom and it's not good because you need to run around and if you sit on a chair for more than 7 hours a day it can cause you to get like weight and stuff…when we were like in stone age we only had to sit on something for like 3 hours, we only sat to eat or rest. But now we just sit on computers, sit down to watch everything"

Angela, School A

Phase 3 Scrapbook review

Considering that children's relationship with the outside world has been diminishing for several years (Thomas et al., 2004), children's desire for exercise and awareness of the health benefits of outdoor play are encouraging. This emphasises the need for suitable external environments in schools, with satisfactory degrees of complexity and novelty (Fjørtoft and Sageie, 2000), to allow children the extent of physical activity they need and desire, for benefits to both health and well-

Figure 9-21 Trim trail at School A, photo by Anna

Figure 9-22 Trim trail at School D, photo by Alex

being (Titman, 1994). Across all four schools, it was apparent that there was a strong desire for more **challenging play equipment**; Figures 9-21 and 9-22 indicate trim trails at Schools A and D. At School A, children complained that the trim trail was not challenging enough for them and many children drew pictures of new play facilities in the improvements section of their scrapbooks. At School B, Faith, also touched on this topic in her scrapbook, when describing the adventure playground: *"it just feels normal now, since we have had it for ages and it's conclusively getting old",* suggesting that children will always get bored:

"You can't really do much about it, because even if there were more activities, you would still get bored of them…it's just how long we've had it"

Faith, School B,
Phase 3 Scrapbook interview

Furthermore, there were some children who contradicted the positive feelings about play areas, raising the issue of **boredom** at playtimes; most notably found to be an issue at Schools A and D. At School A, where there are less facilities and designated play areas than at the other schools. Josie's scrapbook drawing highlighted proposed improvements would be new play equipment; Figure 9-23. The desire for more challenging equipment and becoming bored in the playground, are issues which could lead to conflicts or withdrawal (Malone and Tranter, 2003b), negatively affecting their play experiences. Malone and Tranter (2003b)

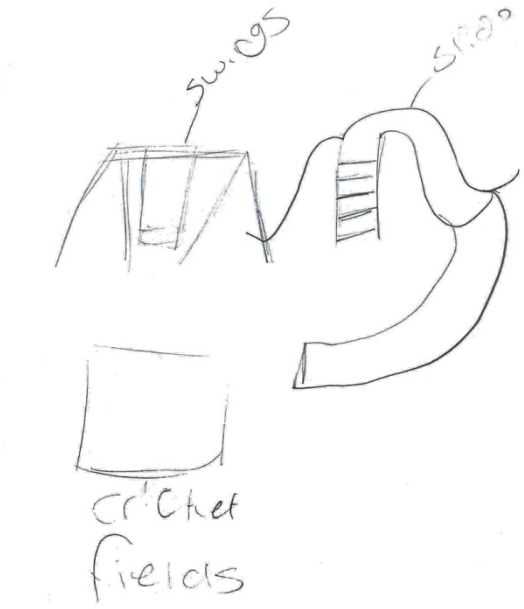

Figure 9-23 Drawing of desired improvements at School A by Josie

"Swings and slide. And cricket field. Well I think we already have a cricket field, 'cus our field can be used for cricket…because the playground is boring and we've got nothing to do"

Josie, School A,
Phase 3 Scrapbook interview

emphasise that a paucity of play equipment, even where there is access to spacious designated play areas, can limit children's options, leading to boredom or aggression, with detrimental impacts on social, physical and cognitive development (Evans, 1995, Moore and Wong, 1997a).

Spatial characteristics, in particular **physical elements** or **objects**, were found to impact on children's play and facilitating game-play. For example, specific spatial characteristics or conditions provide hiding places, provide 'bases' or define rules and provide meeting places. Belle, at School D, explained the drawing in her scrapbook discussing methods of playing the "*The Troll Game"* in the "*old quiet area*"; Figure 9-24. Here, the lines on the ground where the paved area meets the grass, offered children boundaries to use for their game. This suggests the school grounds can offer particular affordances for children (Malone and Tranter, 2003b). The concept of affordances in the environment was first coined by Gibson (1986), as a concept whereby elements of the environment become identifiable with due to their functional potential (Titman, 1994). Likewise, children utilised other physical structures in the external environment during play, including: the school building walls, fences, walls surrounding landscaped areas, benches, planting boxes, external canopies and rubbish bins.

Additionally, physical elements of the natural environment were important to children in play areas, including: trees, shrubs, logs, grass and

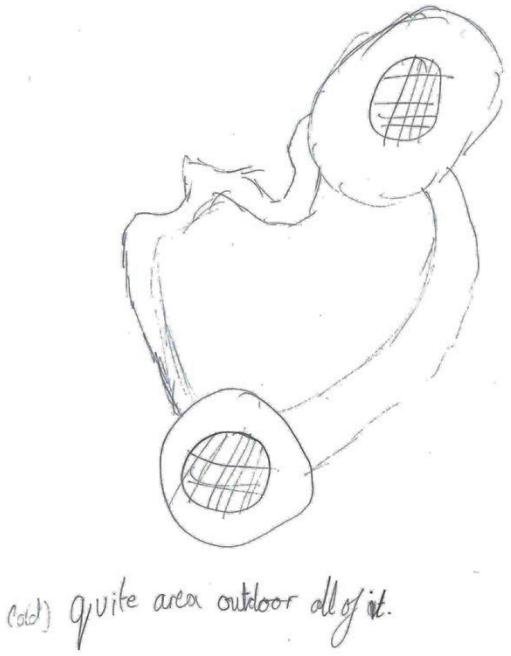

Figure 9-24 Drawing of the old quiet area at School D by Belle

"The old quiet area, because you can just walk around. And we made up this game called the Troll game and there's these, there's this line, here, and there's the people, then there's the person who pretends to be the troll, and you are not allowed to go past that line… The Troll Game. And if the, if someone gets caught, because they have to run to this circle, then then have to go in the stew"

Belle, School D,
Phase 3 Scrapbook interview

planted areas. Areas of the school grounds, or physical objects, offered children opportunities for imaginative play. For example, at School B, Austin had nicknamed the red ropes "*The Flying Machine*"; Figure 9-25, at School D, Jacob explained the invented game "*Run the Goblet*" which was played on the logs; Figure 9-26 and Layla at School B, specifically suggested that the boat area was a "*nice place to use your imagination";* Figure 9-27*:*

Figure 9-25 The red ropes: *The Flying Machine* at School B, photo by Austin

"This is a really nice place to talk and it's also a nice place to use your imagination…I would like, get in the boat, and all my friends would get in the boat and like if I was a mermaid or something, I would hop on that rock and the others would sit in the boat and pretend to make waves on the rock, like as if I was a Little Mermaid…say the grass was the water , these were little rock stumbles in the water and the boat was in heavy waves…"

Layla, School B

Phase 2, Child-led tour

Figure 9-26 The logs: Where you play *Run The Goblet*, photo by Jacob at School D

Natural elements were also desired by children in the school environment due to their affordances and appearances as they positively affected children's feelings. For example, Leah at School A proclaimed that she liked the "*green-ness*" of the trees whilst natural areas at School D were described as making the school look "*pretty*". The significance of the appearance of the external environment at school has been emphasised by Titman (1994), suggesting that children respond on a simplistic level according to sensory

Figure 9-27 The boat: A place to use your imagination, photo by Layla at School B

stimulation. Elements were found to be valued, if they offered any stimulus or diversity in a space (Cele, 2004), whilst the quality of the overall appearance was thought to convey meanings about the school as a whole entity (ibid). In the example opposite, Robbie and Tanya suggest that having trees not only makes the place look pretty but he sees them as useful to him in a game of "*Dobby*", alluding again to the affordances provided by the natural environment. Additionally, hills, trees and bushy areas of the school grounds were also used as physical facilitators in play. Children expressed their desire to have trees for climbing and hills for rolling down, whilst it was noted, both on child-led tours and during the focus groups, that some bushy areas were designated by children as good spaces to hide or make dens. Children at Schools B, C and D discussed how specific parts of the environment were suitable as secret meeting places or hide outs for games; Figure 9-28:

"The secret den – although not very secret. We have like meetings with my football team and stuff…it's a good place to play sardines and stuff. One person hides and the rest count and when you find the person you have to hide with them…like a sardine in the can"

Riley, School C,
Phase 2 Child-led tour

In his scrapbook interview, Austin at School B, also described the use of hide outs around the adventure playground area, for playing "*Dobby Hide and Seek*" (see Austin's description, p.287

"Robbie: I think the playground's fun because it's like a field, it's nice and open. And I like that we have got trees as well because like, then when you are playing Dobby, you can think of tactics and stuff…
Tanya: And nature and stuff that's very pretty
Robbie: Yeah, nature. That's why I think we need trees in the school because then we have got the air and stuff from the trees
Tanya: And we have got the really pretty plants and stuff and there's garden club as well"

Robbie and Tanya School D,
Phase 3 Scrapbook interview

Figure 9-28 The secret den, taken by Riley at School C

Figure 9-29 Hide outs by the adventure playground at School B

and Figure 9-29). Here, the character and physical characteristics define the appropriateness for use as a hide-out or den, allowing space for children's creativity, imagination and activities, transforming the environment into meaningful 'places' (Kylin, 2003). Dens and hide outs allow children to have some privacy, a sense of security and space that they can call their own, taking ownership over parts of their environment (Titman, 1994). Furthermore, Austin described that in their "*bomb shelter, everyone can fit in*", suggesting that the hide outs are both secret and social spaces for children (ibid). Qualities and conditions of places where children sought refuge or 'places to hide' were akin to that of places to relax and rest, discussed in the following section.

> ***"Sometimes we play hide and seeks, and Dobby hide and seek sometimes and we go in like little hide outs. There's different types of ones, there's in the bushes, when we go up on the rock, only four people can fit in, four people in the tunnels, there are two tunnels. There's like a little bush and there's a little tunnel leading down, where you can just look out, and only four people can fit in 'cus there's two tunnels and only two people can fit in each one. And there's - we all call it the bomb shelter - everyone can fit in that and it's basically when we go down the bushes and there's something we call a Smurf Hole…It's amazing…if you go down across our class a bit, you will see like a huge bush and there's like a little gap with a rock, and if you go down further to the bush, there's some doors, and if you don't take the right bush door then you will get pricked on your finger. And it's trapped in there, so when you go in, if anyone comes in they'll get pricked, again, and anyone with long hair, the vines will catch the hair and there's a back door…"***
>
> *Austin, School B,*
> *Phase 3 Scrapbook interview*

9.4.3 Places to relax

It has previously been noted in Chapter 8, that children desired places to relax (and calm down) at school and this was also frequently referred to in discussions about playtime and the outdoor environment. Children found areas of the external environment that allowed them to rest and relax, or chat with friends; for example, Heather at School B liked the boat and rockery area; Figure 9-30.

Figure 9-30 The boat and rocks at School B, taken by Heather

"I have got the boat and some rocks because pretty much the same reason as the tyre, because you can just sit and relax and talk with your friends in the shade"

Heather, School B

Phase 3 Focus Group

The significance of children seeking refuge in natural areas or built elements of the environment was highlighted in a study by Kirkby (1989), who found that 47% of play took place in enclosed areas of the playground and through an assessment of design variables, concluded that the environment can enhance or discourage play behaviours. The perception of the affordance of an element or space, and ultimately the identity of the setting, can affect behaviour patterns and define the purpose (Kirkby, 1989).

Furthermore, spaces were identified as places that children could use for comfort or if they wanted to calm down. For example, at School C, there were "*hidey holes*" in the playpark, as described by Camille and Katie, where children can go to calm down at play time:

"Researcher: Where do you feel happy at school?

Camille: The Hidey Holes in the play park…

Researcher: So why the Hidey Holes, why do they make you feel happy?

Camille: Because they're quiet…

Researcher: So what is it about those places that makes you happy?

Katie: The classroom, because if I just get angry I know my friends will calm me down. And then the play park, outside because it feels nice. And I like my chair

Researcher: What makes it feel nice?

Katie: Because I have all my friends there and say if I, I like when I get angry I start to like hit people, but then I just go to like a certain little, where the little hubs are, at the play park and just calm down"

Camille and Katie, School C

Phase 2 Scrapbook focus group

Figure 9-31 The play park 'Hidey Holes' at School C, photo by Camille

In this example, the children suggest that the small cubby holes in the play park offered quiet conditions and a place where they can escape to at playtime, helping them to calm down making them feel happy. It seems that these areas of the external environment could be significant to the calming down process. Children's need for **privacy** and moments of solitude was equally apparent in the findings; places that offered this form of escape from others were valued by children and is something that can often be overlooked by adults (Cele, 2004). However, Katie also refers to the fact

Figure 9-32 Hidey Holes at the base of the play park structure, photo by Ellie

that the play park *"feels nice"* because she has all her friends there, suggesting that she finds comfort in by being surrounded by friends. Returning to Austin's description of the "*smurf hole*" and "*bomb shelter*" at School B, where these secret spaces were also social spaces, it is apparent that children's need for privacy can be satisfied in a group scenario; in places to hide, or where children desire solitude; in places to be alone.

9.4.4 Communal places

In addition to seeking places for relaxation, children described places they sought out to gather together, allowing them to **feel connected** and close to friends. Places that facilitated such meetings, appeared to demonstrate a **sense of community** between the children and facilitate social interactions. Places of refuge and secret hide outs have previously been discussed. However, in addition, there were more informal spaces that children referred to as places to assemble as a group; notably, **quiet areas, places for meetings** and **places for eating**. An example of this was the bandstand at School D, described by Annabelle, who stressed the importance of the place to eat their crisps; Figure 9-33.

All four schools had areas defined by the children as **quiet areas** in the school grounds; at Schools A and D there were specific or suggested 'quiet areas' as designated by the school.

Figure 9-33 Place to eat crisps, the Bandstand at School D taken by Annabelle

"After we have had our lunch, usually we stand in there and eat our crisps, but if there is some people are still eating on there - because if it's really warm we get to eat outside - if some people are still eating on there, we have to wait… So, we need that for all of our crisps and everything"

Annabelle, School D

Phase 3 Focus Group

For example, Belle, at School D, drew the quiet area in a focus group and selected the photo for her scrapbook, describing it as a place to spend time talking with friends; Figure 9-34. Whereas Tanya, at School D, said in her scrapbook that she feels happy in the quiet area and explained that she sees the quiet area as a place to go when you don't want to do anything.

"On the playground, it's all – you go on the playground, to play, and stuff. If you want, if you want to sit down and you know, not really erm, do anything, maybe just read a book or something, want to be a bit quiet, then you would do in the quiet area"

Tanya, School D

Phase 3 Scrapbook interview

This emphasises the importance of having designated quiet areas within school grounds for children to 'do nothing', have quiet time alone or for quiet social interaction with friends.

On a larger scale children at School B, highlighted the importance of having a communal space for gathering and special events. The central courtyard was seen as a communal space for the school and members of the community, and was considered a meeting place for parents and children alike, before and after school. This space held significance for some of the children, triggering happy memories of past events during the discussions, children recalled previous events that had taken place: school discos, fund raising events, bonfire nights and Christmas carol

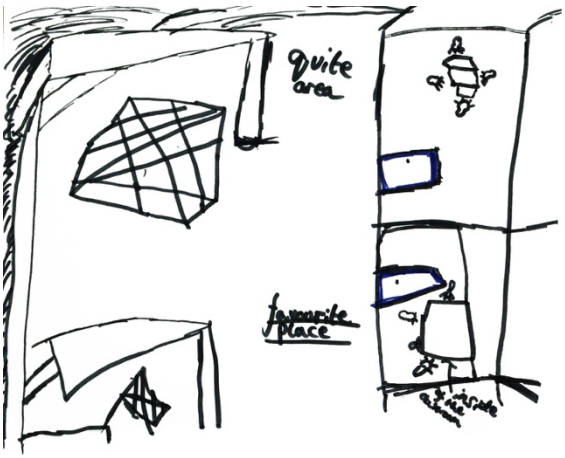

Figure 9-34 Drawing of the quiet area at School D by Belle

Figure 9-35 Quiet area at School D, photo by Belle

"[Photo] number 1 is the quiet area and I like it because it is quiet and I can talk to my friends there"

Belle, School D

Phase 3 Focus group

services. Layla at School B, chose to draw a picture of the courtyard as an example of a good place at school, describing it as "*a special space for us to have little special days"*; Figure 9-36.

Children fondly described spaces for events or communal activities at school (this also included interior spaces such as school halls), considering them as 'special' spaces. There seemed to be a desire for places of communal gathering expressing a **sense of community** which can also enhance feelings of **safety and security** (Brkovic et al., 2015).

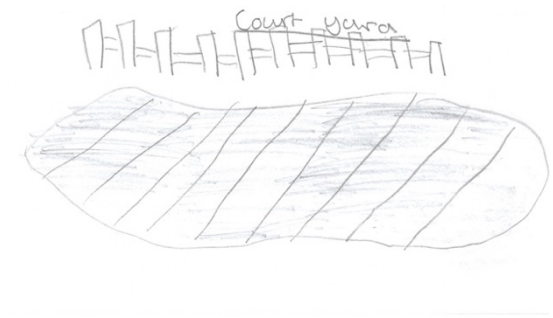

Figure 9-36 Scrapbook drawing of the courtyard at School B by Layla

"I drew the courtyard, because, in Year 4…when it was the firework night and Pudsey day - the Pudsey Bear. On Friday, I was singing on the stage, because the young voices choir were the ones that sang that year. Which wasn't this year it was last year, so we sang there and it made me feel free, because when I sing it just, I'm in the mood of singing and not anything else. I don't have to worry about anything else. So, in the courtyard, reminds me of that moment, which also makes me feel free…It's a good space to have because, if you are doing like something special, say for Red Nose Day, we did the dunkings…"

Layla, School B,
Phase 3, Scrapbook interview

9.5 Summary: The importance of the external environment

This chapter has presented the thematic findings associated with the external environments provided in the school grounds and has highlighted the importance of the external landscape to children. Children have expressed their interests in learning outside, confirmed their affinity for the natural environment, identified their current needs, wants and desires, and experiences in play spaces in school grounds. Considering that there is evidence in the literature to suggest that children's relationship with the outside world is diminishing, the findings which have been discussed indicate a more positive outlook. The benefits of some of the more extensive play spaces have provided encouraging results (with particular reference to School B), indicating that children still want and long to spend time outdoors. This stresses the significance of the external grounds for school design, confirming that arguments presented by Adams (1990) are still relevant today.

Findings have alluded to children's desire to learn outside more, due to environmental conditions, the benefit of learning in context, and their inherent affinity for natural environments. In terms of play spaces, findings suggest that children require spatial variety and the children value their sports facilities and play areas highly. Children's play experiences, their desire for exercise and experiencing a sense of freedom have been revealed. Interactions with both man-made and natural physical environments have been discussed, highlighting a need for challenging play areas, the importance of elements of the physical environment and the need for incidental spaces, places to relax and communal spaces. The importance of children's perceptions of their school facilities in school grounds has also been highlighted.

Desirable learning conditions (in the external environment) have been suggested and were found in both the natural environment and within man-made structures. Children felt motivated when learning outdoors because, as they described, the location was different to the classroom. Sought after conditions for learning included: access to fresh air, shaded, calm and peaceful. Places that provided conditions such as these were able to offer feelings of safety and security, allowing children to relax and feel comfortable, which may also be linked to providing a sense of freedom (Dutt, 2012). Additionally, positive physical qualities of spaces were reported including the tactile and tangible qualities of the natural environment which provided heightened

feelings of comfort; for example, the willow tunnel with leaves that "*hug you*". This has emphasised the importance of the sensory qualities of spending time in the natural environment for children, as also suggested by Titman (1994).

Children's affinity for the natural environment was recognised in the findings. Children's inherent connection to nature and inquisitive attitudes to explore and discover were apparent. Malone and Tranter (2003a) note that children have their own unique ways of understanding the natural world. Growing areas were particularly popular with children, whether for plants in classroom gardens or designated allotment areas for growing vegetables; and these can become a valuable educational tool (Brkovic et al., 2015). Children's engagement with growing areas seemed to instil a sense of ownership and pride over the plants that they are tending to. This is thought to encourage respect and responsibility for their environment (Titman, 1994), indicating that this had an influence on attitudes, whilst also educating about wider issues of sustainability (Adams, 1990, Brkovic et al., 2015).

Equally, it was indicated by the children that the natural environment played a role in learning, which has also been reported by Waite et al. (2016). Direct experiences with nature and wildlife encouraged learning and children felt they learned better when located in the natural contexts, if they were learning about related topics. This is in line with arguments by Malone and Tranter (2003a), who suggest that allowing experience of the natural world is linked to environmental cognition. For example, pond areas facilitated learning about wildlife and the fields, wild areas, trees and areas to nurture wildlife were all commonly referred to by children as places where learning takes place. This can be seen to stimulate interest and motivation (O'Brien and Murray, 2007, Waite et al., 2016) and outdoor learning activities (particularly Forest Schools programmes) were popular amongst children, who showed an awareness of their own learning. Children's learning associated with the natural environment could also be linked to learning activities taught outside of school; for example, at Beavers or Brownies and gardening clubs, thus providing areas of natural environment could help to reinforce this learning within the school context. However, it was implied by the children that learning outdoors did not necessarily

happen often enough, suggesting that teaching staff should perhaps be utilising the outdoor facilities more often.

In the twenty-first century, now a technology-driven environment (Simmons, 1993), it is thought that children spending less time outdoors than ever before (Malone and Tranter, 2003a, Ghaziani, 2012, Dutt, 2012). Hence, the findings here, highlighting children's attraction to learning outside is important and appropriate outdoor learning accommodation should be considered in future schools. In summary, the potential benefits of providing outdoor or natural learning environments for children, as evidenced in literature, included: personal, social and emotional development (OFSTED, 2008, Mirchandani and Wright, 2015), benefits to health and well-being (Kelz et al., 2015) and improving academic achievement (Williams and Dixon, 2013). Furthermore, it has been suggested that the natural environment and school grounds may affect children's perceptions of the total school environment, providing a 'hidden curriculum' (Titman, 1994) that conveys subtle messages and allows children to develop a sense of care, ownership, pride and a sense of place (Adams, 1990).

As well as places for learning, places for play have been explored in this chapter. Children expressed a need for space, variety and a sense of freedom in the play areas in school grounds. One of the fundamental needs children desired whilst at play was adequate space with sufficient spatial variety to facilitate different forms of play, to ensure adequate physical activity and to provide spaces to relax. Having adequate space facilitated children's game-playing and encouraged their imagination. Exploration of space can provide stimulation for learning and development (Adams, 1990). Access to a range of facilities and a variety of play spaces seemed to impact positively on children and promoted social interaction.

Variety in play facilities fostered an appreciation for the school, further adding to positive perceptions of school, heightening a sense of pride and contributing to building the identity of the school, through the eyes of the children. This builds on the findings reported in Chapter 7, where the importance of children's positive perceptions of school has been discussed.

Having access to large or open spaces encouraged feelings of freedom. Natural environments in schools are thought to promote this sense of freedom (Dutt, 2012) whilst having open space has been linked to positive feelings experienced at school (Langhout, 2004). The notion of feeling free was defined in terms of being free from school work and allowing imaginative play. Having access to fresh air and experiencing the feelings of freedom allowed children time to have a "*breather*" and some time to "*restart your brain*" which were important to children at playtime.

Places that promoted physical exercise were deemed important, including: sports pitches, the school field and playground. Where play equipment was more extensive (notably School B), it was found that this encouraged more physical exercise. Children expressed a significant desire and love for getting exercise and the need for more challenging play equipment was identified. Exercise, challenge and risk taking were linked to children having fun and seemed to positively affect children's mood. This is encouraging considering the changing lifestyles of today and children's connection with technology (discussed in Chapter 8), as children were aware of the health benefits associated with exercise. However, there was evidence in the data that suggested that some children were bored at playtimes, either due to a lack of play equipment or due to the equipment and facilities provided becoming monotonous and children getting "*too used to it*". This suggests that children require flexibility, complexity and sufficient novelty (Fjørtoft and Sageie, 2000) in the design of play spaces in schools. Perhaps changeable and adaptable play spaces and/or equipment are required to maintain positive perceptions, experiences and engagement of children, to avoid boredom, conflicts or withdrawal (Malone and Tranter, 2003b).

Physical characteristics of the built and natural environment were found to encourage play and provided places for various activities, including: hiding spaces and secret dens; places to relax and chat with friends; places to take shelter; places for eating; and places for meetings or communal activities. Physical and environmental conditions in these spaces offered particular affordances for children, where parts of the environment became identifiable due to its functional potential (Gibson, 1978). Places for social interaction, places where children could be alone, places to be comforted or calm down, places that encouraged a sense of

community, places for the imagination and places for peace and quiet were all necessary for children in the external environment. It has been highlighted that these findings are in line with places identified by Titman (1994 p.72) as sought after spaces for children, including: *a place for doing, a place for thinking, a place for feeling and a place for being* (ibid).

It is widely known that spending time outside the classroom has multiple benefits for children, learning becomes more interesting and engaging; contributes to children's social, personal and emotional development; improvements for under-achievers; increases enjoyment at school; enhances well-being; and promotes high achievement (OFSTED, 2008). O'Brien and Murray (2007) evaluated the Forest Schools programme and identified a range of benefits for children including: confidence, social skills, language, communication, motivation and concentration, physical skills and knowledge and understanding. It is therefore, interesting to note that the findings discussed in this chapter have shown that many of the children's outdoor experiences in school grounds, whether in formal learning situations, during free time or whilst at play, have impacts such as those attributed to the popular Forest School programme. The government have emphasised the importance of outdoor learning (OFSTED, 2008) and the use of the forest school curriculum is rapidly becoming more common in primary schools in the UK (O'Brien and Murray, 2007). However, some of the positive outcomes of adopting this approach may already be inherently embedded within school grounds. Thus, the importance of the role of school grounds on children's daily experiences, as well as for providing spaces for more formal 'outdoor learning' is highlighted. Therefore, it is essential to consider the external environment as a holistic part of school design, rather than a separate element.

Furthermore, the appearance of school grounds are important to children and may play a role in conveying messages about the school as a whole entity (Titman, 1994). Schools set back from the road, surrounded by large expanses of tarmac do not necessarily give a favourable impression to pupils, staff and the community (DfES, 2002b). It remains that school grounds are in some instances still under-developed and under-used as an educational resource (Adams and Ingham, 1998). As Adams and Ingham (1998) proclaimed almost 20 years ago, the findings suggest that the

more extensively designed a school landscape, the more it is enjoyed by children and thus, the more it can provide extended and enhanced educational experiences. The findings presented in this chapter have indicated that it becomes essential to understand children's experiences in their external environments, in order to work towards developing guidelines and proposals for the design of future school projects and school grounds.

Chapter 10

Conclusions and Considerations

10 Conclusions and Considerations

10.1 Overview

To conclude the thesis, this chapter provides a summary of the key findings in relation to previous research on the topic and discusses how the findings align with the research questions. The contribution to knowledge is presented, followed by a reflection on the research process and the considerations and limitations of the study are also explained. Future implications and research avenues to pursue are noted, ending with concluding remarks.

10.2 Children's perspectives on new primary schools: key findings

This thesis has reported findings of a series of empirical studies in primary schools to identify children's perspectives on the impact of their school environments. The study set out to answer the following research question:

How do new[1] primary school environments impact on children, from their perspective?

Under the umbrella of this question, the research aimed to investigate and understand how characteristics of the school environment can impact on children and their experiences during their daily lives at school and to identify aspects of the environment that are important to children. This has been achieved by reviewing the existing knowledge relating to school environments and school design and collecting qualitative data from case study primary schools built in the last fifteen years. In doing so, the secondary aim of the study, which was to investigate the usefulness of participatory methods in the evaluation of primary school buildings, has also been realised.

Initially, a literature review and scoping visits to schools were undertaken to understand the current state of school design in the UK, to examine the existing body

[1] *New school buildings are defined as those that have been built as total new build or newly extended within the last 15 years

of research and to familiarise with the research context. Although there has been extensive research into school design over the years, a significant gap emerged in the literature, in the years following the demise of the school building programmes (BSF and PCP) in the UK, there is a paucity of research surrounding users views on their environments following occupation of new school buildings. Studies that have involved children, have not necessarily focused on obtaining children's perspectives and understanding their experiences in more recently constructed school buildings.

Following the literature review, a pilot study was undertaken to further understand the context and to trial participatory methods, this resulted in three sub-research questions:

1. **What factors in a new* primary school environment are considered important to children?**
2. **How do environmental and physical characteristics affect children at school?**
3. **How can the school environment affect children's place experiences?**

By undertaking participatory studies with children, at four case study school sites, it offered insights into how the environments can impact on children, from their perspective. In using the principles of a ground theory approach, the key findings emerged from the data as a complex network of inter-related themes, which have been discussed in Chapters 7, 8 and 9, in relation to existing literature. In order to maintain the voice of the children throughout, the findings chapters were thematically structured in line with the outcomes from the axial coding process. Therefore, it is necessary to conclude in the sections that follow, by providing a summary of the main findings with respect to the sub-research questions.

10.2.1 What factors in a new primary school environment are considered important to children?

In response to this research question, specific aspects that were found to be most liked and important for children, across all four schools, were presented in Chapter 6:

- External spaces: the field, playgrounds and play parks, sports pitches, gardening areas and natural environments
- Internal spaces: classrooms, libraries, hall and group learning spaces; medical rooms (specific to Schools C and D only)
- Objects: interactive whiteboards, displays, information displays or signage
- People: teachers, staff members, friends and siblings

Whereas elements that were found to be disliked and least important included toilets, litter, untidy or dirty areas.

Furthermore, in Chapter 8, the findings highlighted the importance of the micro-scale classroom environment. Key characteristics that were found to be important to children, included: spatial and physical conditions of the classroom, environmental conditions in the classroom and similarly, the positive characteristics of alternative spaces at school used for learning. It was reported that children liked to learn in spaces other than the classrooms and there were various places in the schools in which to do so. Across the schools, spatial variety and flexibility was found to be important to provide alternative learning spaces. Children expressed a desire to feel safe and secure in the classrooms and outlined the importance of having access to sufficient “tools for learning”. Most notably, the importance of the use of visual displays was raised and having access to technology within the classrooms was seen as a significant learning aid by the children.

The importance of the external environment to children has been revealed and discussed in Chapter 9. Children have suggested that they liked to learn outside, highlighting the importance of external spaces within school grounds as well as having the ability to learn in the natural environment. Children indicated their most liked and important places to play and the key characteristics that affect their play have been identified. Spatial variety, adaptability and challenging play equipment were all found

to be important characteristics in children's play space at schools, encouraging physical activity and promoting social interaction.

10.2.2 How do environmental characteristics affect children at school?

Desirable and undesirable characteristics in the school environment have been identified and the ways in which they can affect children at school have been discussed in Chapters 7, 8 and 9. Environmental characteristics that can affect children at school have been found to consist of physical and spatial conditions; perceived environmental conditions relating to human comfort; and available facilities and equipment. Characteristics such as these have been found to impact on children's feelings and experiences, and their needs, wants and desires.

In Chapter 8, key characteristics within the school environment that can have an impact on children were discussed. This included spatial and physical characteristics of the classroom; perceived environmental conditions in specific spaces; characteristics of alternative spaces to learn; and the physical tools children believe are necessary for learning. Physical and environmental conditions of classrooms and other spaces were found to impact both positively and negatively on children's experiences, whilst occupying those spaces. Physical characteristics that children have suggested impact them in the classroom included: having enough space, the layout of the space (ie. the furniture), wall displays, the comfort of the furniture and the use of technological equipment. Children reported that they were affected by feeling cramped or squashed in the classroom and it was discussed that this may be influenced by spatial and social density. The potential for negative effects on children is of concern, as suggested by Darmody and Smyth (2012), spatial and social density may affect children's performance at school. Access to views of the external environment was important and desirable for children, allowing them time to think and small breaks from learning, although this proved to cause distractions for some of the children in this study.

Children observed environmental conditions in the classroom and raised both positive and negative matters. There were concerns raised regarding adequate daylighting and discomfort glare on interactive whiteboards; issues with noise transfer to the

classrooms from adjacent spaces and toilets; and issues remain with thermal comfort in some classrooms. Children expressed a desire to feel safe and secure in the classrooms and this was affected by both social and environmental factors; for example, the presence of teachers and friends and the ability to feel comfortable in the classroom. Alternative spaces to learn were reported to offer positive environmental conditions for some of the children; for example, break out spaces or outdoor spaces being more quiet and peaceful for learning. Thus, the school providing spatial variety and flexibility for learning activities appears to have benefits for those children who prefer learning in spaces other than the classroom.

Additionally, the wall displays and interactive whiteboards were considered positive characteristics in the classroom environment and more specifically, children see them as essential learning aids. Although, malfunctioning technology was reported as an issue at times. Within the whole school environment, having the access to technology was strongly desired by the children, and in their view, it facilitates their learning in various ways, as discussed in Chapter 8.

In Chapter 9, both physical and environmental characteristics of the external school environment were raised and were found to have various impacts on children at school. This was discussed in relation to positive environmental conditions of outdoor learning spaces, the physical attributes of play or social spaces and the inherent qualities of the natural environment. Children suggested that the environmental conditions experienced in outdoor learning spaces allowed them to feel relaxed and comfortable; for example, being outside in the fresh air and places being peaceful. Nevertheless, it was reported by the children that formal learning outdoors does not necessarily happen as often as they would like. Children also alluded to the sensory nature of the natural environment as it was perceived to provide feelings of comfort and relaxation for them. Furthermore, the physical, tangible qualities of the natural environment were reported to aid children's learning; for example, pond areas and gardening areas, and this appeared to heighten their environmental awareness. Additionally, where there were expanses of open space, children suggested they experience feelings of freedom which can allow children a break from learning and to 'let off steam' (Titman, 1994, Malone and Tranter, 2003b).

In terms of play spaces, there was a need for variety, adequate space and physical challenges desired by the children. Having a range of sports facilities and a variety of play spaces seemed to have positive impacts on children, encouraging physical activity, facilitating different types of play, encouraging imaginary play and promoting social interaction at play times. Physical elements and objects in the outdoor environment were found to facilitate play, providing hiding spaces, providing bases, defining rules for games and providing meeting places. Physical characteristics of elements and structures within the school grounds (both natural and man-made) offered particular affordances for children (Gibson, 1986, Malone and Tranter, 2003b), offering opportunities for different types of play and social interaction as well as quiet spaces and places for relaxation. However, some children also reported being bored at playtimes and this was due to a lack of equipment in some of the schools, further emphasising children's need for variety, complexity and novelty.

It was also highlighted that the available facilities appeared to have an effect on children's feelings and mood. Where children felt there were extensive facilities available to them in the school grounds, this fostered an appreciation for the school and heightened a sense of pride. The physical appearance of the school grounds was discussed in Chapter 7, where children's perceptions about the holistic school environment were revealed. Key physical elements that played a role in children's perceptions of the school included: the appearance of the front of school, entrances and school gates, the shape and size of school and the use of colour both internally and externally. Generally, children had positive views about their school buildings and the findings suggest that physical characteristics can influence their holistic perceptions about the school and this is discussed in more detail in Section 10.2.3.

10.2.3 How can the school environment affect children's place experiences?

The ways in which the school environment can affect children's place experiences were discussed predominantly in Chapters 7 and 9. The findings, with respect to this research question, can be theorised on two levels: aspects of the school environment that can impact children's place experiences at both a macro scale (the whole school) and a micro scale (individual spaces at school). At the macro scale, children's perceptions and their holistic view of the school has been examined with respect to

physical and social characteristics and their potential contribution to building place-identity. Whereas, at the micro scale, children have revealed their experiences in specific spaces and places that are important to them at school, alluding to how the environment offers affordances for them.

Considering place experiences at the macro scale, in Chapter 7, the findings relating to the holistic school environment were discussed and it was proposed that some physical entities within the school environment can convey subliminal meanings to children which may contribute to building an identity for the school. The school possessing a specific identity was identified as an important factor for children, as they described their perceptions of their school. Themes underpinning the discussion in Chapter 7 were related to perceived physical and spatial characteristics which became evident visually to the children. Themes included: how the school appears to be, the significance of the front of the school, the shape of the school and colour and materials. Each of the themes discussed seemed to contribute to, and impact on, the way in which children perceived their school as a complete entity; providing the children's holistic view of the school. Children's experiences and perceptions of their school can impact on their emotions and feelings, as Edgerton et al. (2011 p.35) notes, studies that have investigated students' perceptions highlight the relationship to a wide range of social and psychological outcomes, as well as educational impacts. Thus, the meanings that children hold for specific aspects of the school environment may be more important than the objective environment (Weinstein and David, 1987). Perceptions of the school will have a role to play in children's sense of place at school, where their ideas, feelings, values, preferences and experiences may also be attributed to building place-identity (Proshansky et al., 1983) within the context of the school. The meanings that children hold about their environments are important, as they can promote attachment to a place (Stedman, 2002); as they are constantly actively exploring, extracting information and differentiating objects (Read et al., 1999). Therefore, if children have positive perceptions about the school environment this may contribute to their attachment to that place. Thus, these perceptions may consequently impact on their desire to come to school and the feelings of pride in their school, as has previously been found in a study on new build schools by Rudd et al. (2008). Ultimately, this may have an impact on their positive experiences whilst they

are attending school which could affect their feelings about school as a 'place', with which they have a desire to engage.

The ways in which physical characteristics of the school were referred to by children in Chapter 7, suggests that this can have an impact on the ways in which children identify with the school as a place. The school becomes a landmark in a child's place-making, possessing a 'status', a 'uniqueness', and as such, forms a specific 'identity' in the eyes of the children. As has been previously noted, Halford (2008 p.931) suggests that the architectural form and layout of spaces as well as the location within a given context can form visual cues that contribute to building this particular identity. At times, children appear to view their school as a symbolic place (Loxley et al., 2011), discussing it with pride, holding the school in high regard and alluding to the salient responsibility of it in providing safety and security. This symbolic, holistic view of the school seems to affect children's perceptions about feeling safe and secure in school, which could also be linked to children's holistic perceptions of the school. The ability to personalise spaces (through the use of displays) to instil a sense of ownership (Killeen et al., 2003) has been determined as an important factor in children's positive place perceptions, which is inextricably linked to place attachment. Place attachment can occur at individual or group level (Scannell and Gifford, 2010), thus, both individual and collective identities formed within the school setting become significant. Additionally, physical characteristics of the school can play a role in developing the collective identity of the school through the eyes of the children, and this becomes important for children's development; as place- identity can influence self-identity (Proshansky et al., 1983). As Sime (1986) has argued, concentrating solely on the physical dimension of spaces is prohibitive, understanding children's experiences of spaces and the inferred meanings is essential for design. Therefore, perceptions about the holistic school environment are important, as they have consequences for how children develop their place attachment and build a sense of place over time.

In terms of the children's place experiences at the micro scale, it has been reported across the findings chapters 7, 8, and 9, how spaces and places within the school environment that impact on children in terms of their feelings and experiences, as well as facilitating activities. Langhout (2004) suggests, the holistic place of the school, comprises many smaller microcosms with their own factors which can impact on

children's positive (and negative) feelings. Children's individual place experiences came to light within the findings predominantly in the external spaces at school (described in Chapter 9). However, there was also evidence (in Chapter 7) to suggest how some elements of the internal school environment may impact on children's place-making at school.

In terms of the layout of the school, children discussed the challenges of wayfinding at school, being perceived as having both positive and negative impacts on children's experiences when navigating through the school building. Nevertheless, the identity of classrooms could be defined through the use of colour or signage, as classrooms exist as mini landmarks within the layout of the school, which in turn played a role in children's wayfinding. Children alluded to the fact that there are 'safe spaces' at school. The notion of spaces being defined as 'safe' was related to the perceived social comfort children experienced by being close to people; for example, their teachers and friends. However, it should also be noted that there exists an inherent security due to physical characteristics in a space, as well as the individual activities that take place in the space, that can contribute to building a sense of security for children. Wayfinding, mini landmarks within the school and feeling safe and secure, are all factors which may play a role in children's overall perceptions of the school and thus, may impact on building their place attachment and an identity for the school.

In Chapter 9, it was reported that children had suggested that there are desirable conditions in external environments in comparison to learning indoors. As such, it was highlighted that spaces in the external environment allow children to relax and feel comfortable whilst they can also be motivated to learn due to being in a different location than the classroom. Children's affinity for the natural environment has been emphasised, and children suggested that their direct experiences with nature and learning in natural contexts helped them with their learning about the environment. Large or open spaces and natural environments encouraged feelings of freedom, and such feelings were found to be important for children to have a break from learning. Having large open spaces has been linked to positive feelings experienced at school (Langhout, 2004) whilst natural environments in schools may heighten this sense of freedom (Dutt, 2012). As noted in Chapter 9, there is an argument to suggest that the natural environment provides a 'hidden curriculum' (Titman, 1994) which conveys

subtle messages to children, whilst it can facilitate the development a sense of care, ownership, pride and a sense of place (Adams, 1990). Therefore, school grounds may play a role in forming children's perceptions of the whole school environment.

Examining children's experiences in places and spaces in school grounds, revealed the importance of incidental spaces and physical facilitators; for example, spaces or elements of the environment that were not necessarily intended for the eventual uses imposed on them by the children. Therefore, physical elements of the built and natural environment offered affordances for children and became physical facilitators in play. In addition to the traditional play spaces, children emphasised necessary spaces for specific activities, including: hiding spaces and secret dens; places to relax and chat with friends; places to take shelter; places for eating; and places for meetings or communal activities. Spaces such as these, offered children places for their various needs that may not immediately be apparent to adults: places for social interaction, places where children could be alone, places to be comforted or to calm down, places that encouraged a sense of community, places for their imagination and places for peace and quiet. It has been noted that Titman (1994 p.72) identified similar sought-after spaces for children, albeit classifying them more broadly: *a place for doing, a place for thinking, a place for feeling and a place for being*. In order for children to locate themselves in certain spaces to achieve some of their needs listed above, it was apparent that the conditions in external spaces offered children particular affordances. Elements of the physical environment became useful and desirable to the children for its functional potential (Gibson, 1978) and ability to satisfy their needs. Furthermore, having adequate and suitable outdoor spaces facilitated game-playing and was found at times to encourage imaginative play. Exploration of space as an activity itself provides stimulation for learning and development (Adams, 1990).

Variety in play facilities further fostered an appreciation for their school, adding to positive perceptions of school, heightening a sense of pride and contributing to building the identity of the school, through the eyes of the children. The appearance of school grounds are important to children and play a role in conveying messages about the school as a whole entity (Titman, 1994). The findings discussed here and Chapters 7 and 9, suggest that the 'appearance of the school' should include the whole extent of the school grounds as this total environment can convey messages about the

school as a complete entity, which may play a role in the formation of the identity of the school for the children.

It has been noted in Chapter 9 that children's attraction to learning outside and the external environment is encouraging, considering today's technology-driven lifestyles. As a final consideration, relating to children's place experiences in the external environment, this poses the question of whether there are any inherent qualities in external spaces that may have the potential to inform the design of the interior spaces, which could ultimately improve children's experiences? Children's positive experiences related to learning outdoors were due to it being different location than the classroom; having access to fresh air; spaces being calm and peaceful; and places providing feelings of safety and security. Some of the qualities of external spaces could be due in part to their physical characteristics; for example, being in a space of a smaller size and the sense of enclosure offered may provide feelings of comfort and safety. Additionally, children expressed a desire to relax and feel comfortable whilst learning and these were feelings reported in outdoor spaces. This could be due to the 'softness' and tactile nature of the natural elements; for example, the grass or the leaves of the willow tunnel that "hug you" (Annabelle, School D). It is possible to draw similarities here with spaces inside the school where children also shared these feelings; for example, quiet areas, 'calm down areas' or the library. All of these spaces offered more comfortable furniture and relaxed seating arrangements. Children's desire to feel comfortable whilst learning was considerable within the findings, thus, there should be further research conducted into the comfort of school furniture to understand reasons why some spaces at school may provide conditions that allow children to relax and feel comfortable whilst learning. Additionally, some of the qualities previously mentioned with regard to play spaces and their affordances for children are worth exploring in future research and their appropriateness for use in the design of internal spaces at school. Returning to an example from School A, the children built their own space in the classroom ('The Sweating Tent' p.164) as part of a class project and this 'mini-space' then afforded the children a new place within the classroom. Following the erection of this cardboard shelter, the children then redefined this as a place to chat with friends or a space to relax, and this was akin to children occupying spaces within the external environment for similar activities. Children's informal spaces at school should be investigated in future research, to try

to understand how we might provide more variety in the types of internal spaces provided in schools and in the classrooms, themselves. This may not solely be concerned with spaces for children's social activities but may also aim to address how and why spatial variety is beneficial for learning spaces.

Furthermore, as the extent of children's positive place experiences in the external environments at school, in both learning and play has been highlighted, it is therefore essential to consider the external environment as a holistic part of school design. Pedagogical thinking and design should value the potential of the school grounds by diminishing the distinction between indoor-outdoor environments (Malone and Tranter, 2003b).

10.3 Contributions to knowledge

Following the summary of the answers to the research questions provided in the previous section, the contributions to knowledge, made by this thesis, are confirmed in this section. This research has provided empirical, methodological and theoretical contributions to knowledge.

10.3.1 Empricial contributions and relevance for practice

The findings, summarised in Section 10.2, have provided an understanding of how new primary school environments can impact on children, from their perspective. However, what are the implications for school design going forward? Inevitably, by conducting a study on primary school buildings, it could be suggested that some of the findings are not necessarily specific to 'new' school buildings. Nevertheless, the findings have revealed the current state of children's needs, wants and desires at school; identified both positive and negative characteristics of the current environments at each school; and described the impact that such characteristics might have on children's experiences. The findings have alluded to the following key areas which, from the children's perspective, should be sensitively considered in the design of primary schools:

- The appearance of the school building and school grounds
- The front of the school and entrances
- The ability to personalise parts of the school
- The micro-scale classroom environment (layout and conditions)
- Access to views
- Providing sufficient space in learning spaces and play spaces
- Spatial variety and flexible learning spaces
- Integration of technology throughout the school building
- Holistic design of the external environment with a variety of spaces for learning
- Design of play spaces in the external environment should provide complexity and challenge, be adaptable and provide variety
- Consideration for the types of places that children use for various activities in the external environment is required, allowing for incidental spaces to develop
- Providing sufficient 'wild' areas, natural environments and space for growing areas
- Consideration for the impact of physical elements and the ways in which the built and natural environment can become facilitators in play

The empirical findings have suggested that these areas of school environments should be given higher priority in the design process and it is necessary that the specifics listed above be considered as a holistic part of school design by architects and designers. Again, these are not necessarily 'new' recommendations, as noted in Chapter 2, investment in school grounds was raised as a design issue for schools during the BSF programme (DfES, 2002b p.34). Reconsidering the DCSF's goals for 'educational transformation', to deliver "places for learning that are exciting, flexible, healthy, safe, secure and environmentally sustainable" (DCSF, 2007, cited in CABE, 2010 p.20), it is apparent from the findings of this thesis that these goals are not only relevant today, but equally, it has been highlighted that these goals are also important from the children's perspective. Likewise, returning to Table 2-2 (originally presented in Section 2.3, p.20), it has been revealed that some of the original objectives reported are desirable and important to the children at the case study schools in this thesis (highlighted in italics and underlined below):

Objectives for future schools for transforming education
Learn in a range of different ways, in a variety of environments and at times respond to their individual needs
Experience learning that will prepare them for future life and work
Develop confidence and feel safe and secure in and around their places of learning
Use high quality computer technology to inspire and support their learning
Extend their learning and leisure beyond the school
Make good progress resulting in high levels of achievement

Table 10-1 Objectives for future schools (4ps and Partnerships for Schools, 2008 p.14)

Moreover, CABE (2010 p.36) advocated the design of stimulating outdoor places to support the curriculum and provide children with varied, rich experiences. Outdoor classrooms, sports facilities, and outdoor environmental education were recommended for inclusion when designing primary schools. The findings of this thesis have provided fresh evidence to suggest that some of the recommendations stipulated during previous school building programmes remain important today. Thus, the findings and considerations for school design, as outlined in this chapter, may have relevance for future policy and recommendations for schools.

Furthermore, the findings indicate that it is essential to understand children's experiences in their environments (both internal and external) which could aid the design of future school projects and external landscapes. Gathering children's perspectives about their school environments is important and can not only provide useful information for designers but also teaching professionals in schools. Following the series of participatory design initiatives, as noted in Chapter 2; for example, the Sorrell Foundation's 'Joinedupdesignforschools' project (Sorrell and Sorrell, 2005); more recent studies have begun to strengthen the research base in this area (Ghaziani, 2012, Darmody and Smyth, 2012, Dutt, 2012). The findings of this thesis add to this growing research area and confirms the need for more post-occupancy evaluation of schools. Additionally, this thesis further highlights the importance of understanding the minute details of children's environments from their perspective, and how they can have an impact on their feelings and perceptions, their sense of place and general well-being at school.

10.3.2 Methodological contribution

The empirical findings of this research, as presented in Chapters 6, 7, 8 and 9, have revealed children's perspectives on four case study schools in Nottinghamshire and thus, have provided a form of post-occupancy evaluation on those schools. By conducting this research, a participatory methodology to use with children in primary schools has been developed and there is potential for the approaches adopted in this thesis to be useful tools for both researchers and designers to evaluate children's experiences of their schools. Across the literature there are a wide range of participatory techniques available, however, the complete methodology developed in this thesis is unique. By conducting the research in phases, it allowed for the methods to be refined at each stage where necessary. Scrapbook approaches are rarely adopted but this method has been instrumental to the research and provided extensive qualitative perspectives from the children, revealing multiple levels of detail. Reflecting on this, the children expressed a sense of pride and joy at completing their scrapbooks and frequently asked the researcher about the fate of their completed booklets[1], suggesting that children enjoyed completing the scrapbooks. As they took pride in what they were doing, the scrapbooks provide an incredibly useful reflection of children's feelings about their school environments. Furthermore, the photo-rating survey proved successful in triangulating the photographic data and was used as a method of testing the standard child-led tour procedure. Therefore, the methods adopted provide a valuable contribution to participatory methodologies in research, whilst there is also potential for techniques such as these to be used in schools, as a study by Clark et al. (2003) has done so previously, by initiating participatory projects in pre-schools. Dissemination of the research findings will include reporting the details of the bespoke methodology to academics and architects alike. The RIBA Plan of Work 2013 indicates the final work stage of a building project, Stage 7, is '*In Use',* suggesting that post-occupancy evaluations should be conducted, advocating user feedback ongoing beyond completion. This thesis argues that the children are one group of key stakeholders and should be involved in such evaluations. As such, the methodology developed in this thesis could be utilised in post-occupancy evaluations of new school buildings in the future.

[1] As a result, the researcher made the decision to return the scrapbooks to the children at the end of the study. Scrapbooks were photocopied and scanned, to be stored digitally, at the end of each research phase, prior to returning the completed scrapbooks to the children at the end of the study.

10.3.3 Theoretical contribution

This thesis has provided theoretical contributions to knowledge, in addition to the empirical findings and methodological contribution. In Chapters 2 and 3, the literature reviewed relating to schools highlighted a gap in understanding children's perspectives on their school environments and a there was a need to understand more about the total school environment, rather than focusing on individual environmental factors. By proposing a broad set of research questions, the unique methodology adopted has built an understanding of children's experiences in new primary school environments. In Chapters 7, 8 and 9, children's perspectives and experiences have been discussed, revealing how certain environmental characteristics have the potential to contribute to the impact of the school environment on children and their place experiences. Children's holistic perceptions about school have been examined in Chapter 7 and in Section 10.2.3; ultimately this has suggested that various elements of the school, when considered together, may contribute towards building an identity of the school, which may have an impact children's place making at school and their own place-identity. Additionally, the importance of the smaller microcosms that make up the total school has been raised and discussed further in Section 10.2.3, as spaces within the school environment, which may seem insignificant to the adult eye, can prove to be invaluable to children as their place experiences have revealed.

10.4 Reflection and considerations

As already noted, this research can make potential contributions to methodologies in research and post-occupancy evaluation techniques in practice, whilst it has also provided empirical contributions. Throughout the research process there have been various considerations, decisions and methods employed to ensure the quality and trustworthiness of the research. These considerations are discussed in the following sections.

10.4.1 Trustworthiness and quality of the study

There is much debate in the literature surrounding qualitative methodologies discussing how the quality and trustworthiness of the research can be evaluated or measured (Corbin and Strauss, 2015, Bryman, 2016):

"Quality is elusive, hard to specify, but we often feel we know it when we see it. In this respect research is like art rather than science" (Seale, 2002 p.102)

This research has been conducted using case study sites and adopting principles of grounded theory. Research methods and the process of analysis need to be well established and the process of developing research tools must be rigorous to ensure data collected is of a high quality, meeting research aims. The research methodology was designed in such a way to address the research aim and questions as well as building methods sensitive to the children as participants. As Corbin and Strauss (2008) state, quality in qualitative research findings should accurately represent the participants' perspectives and life experiences. Literature concerning the topic of evaluating quality in qualitative research considers various concepts when assessing quality, including trustworthiness, credibility, confirmability and dependability (Lincoln and Guba, 1985). The commentary that follows will discuss quality with regard to the following topics: validity and reliability, credibility (Lincoln and Guba, 1985, Corbin and Strauss, 2015), transferability and usefulness (Lincoln and Guba, 1985, Charmaz, 2014) and confirmability (Lincoln and Guba, 1985, Bryman, 2016).

10.4.2 Validity, reliability and credibility

Validity can be described in terms of the truthfulness of the research (Corbin and Strauss, 2015, Silverman, 2016). The reliability or dependability of a study is the notion that if the study were to be repeated in the same environment, with the same participants, the same conclusions would be found of the data (Yin, 2014, Bryman, 2016). In qualitative research, the reliability of a study can be difficult to determine, however, if detailed information is explicitly provided regarding the research process in conjunction with, as Morse et al. (2002 p.9) suggest, building in strategies such as: "investigator responsiveness", "methodological coherence", "sampling adequacy" and "saturation" it is possible to negate concerns regarding the validity and reliability. Throughout this study, the researcher recorded the evolution and application of the

methodology in detail, constantly evaluating the process and ensured the rationale behind decisions was documented, in conjunction with peer review and supervisory discussions. This has ensured methodological coherence and coupled with investigator responsiveness (Morse et al., 2002) confirming the reliability and validity of the study. The methodology chapters, described in detail the evolution of the research design and the development of the research phases, including the rationale for decisions that have been made by the researcher. Investigator responsiveness and the potential influence of the researcher on the research itself, and the participants, is discussed in Sections 10.4.4 – 10.4.6.

Credibility refers to the trustworthiness of the findings, ensuring that they represent the true picture of "participants', researchers' and readers' experiences with phenomena" and acknowledging that the conclusion is one of many possible interpretations (Corbin and Strauss, 2015 p.315). Credibility can be evaluated by reviewing the methods undertaken to increase confidence that research has produced accurate findings. Creswell (2012) proposes several procedures for achieving credibility and trustworthiness (Lincoln and Guba, 1985) of the data: "prolonged engagement and persistent observation in the field", "triangulation", "using peer review or debriefing", "negative case analysis", "clarifying researcher bias", "in member checks", "rich thick description" and "external audits" (Creswell, 2013 p. 201-203). As evidenced throughout the thesis, many of these procedures have been followed and described in detail; for example, with regard to "prolonged engagement with the field", the researcher spent considerable time in the field at beginning of study to develop familiarity and understanding of context and setting during both the scoping study and pilot study. This process orientated researcher and a deeper understanding of schools' context was developed.

The research has also been scrutinised at various points throughout its design and development through both peer review and external sources. Discussions were ongoing with a supervisory team; research progress was presented at peer conferences and seminars to research groups and other academics; and developing the research tools alongside the teachers and school contacts. The grounded process of data analysis was tackled with an open-mind to reveal all potential outcomes from the data, ensuring that all explanations were revealed, giving voice to the child

participants, whilst it is acknowledged that the conclusions made are only one possible interpretation of these findings (Corbin and Strauss, 2015).

10.4.3 Transferability (usefulness)

When transferability is referred to in qualitative research, it generally seen as external validity or generalisability, whereby the findings could be useful beyond the immediate study or have meaning in similar situations (Yin, 2014). As Charmaz (2014) suggests, in the criteria for evaluating grounded theory research under the "usefulness" criterion, it is necessary to ask: "Does your analysis offer interpretations that people can use in their everyday worlds?" (Charmaz, 2014 p.338). As the research in this instance was exploratory in nature, investigating four different school buildings, it is inevitable that the findings are not generalisable in nature. However, where cases presented similar findings, an element of transferability may be possible, or in other words 'useful' in specific situations. The key aim of the research is to evaluate how new primary schools impact on children's experiences at school, and as such, issues which have been raised might be worth considering in the design process. In this case, the very nature of the research, the *process* of evaluating new school buildings, has provided useful information for architects, designers and other readers. It is intended that through dissemination of the research by publishing papers, in both academic journals and professional publications, and presenting at conferences (academic and professional), the research will become available to the wider professional audience; including, academics, architects and the schools themselves.

Throughout the research, detailed 'rich' descriptions (Creswell, 2012) have been provided to describe the process, including the design of the research methods, recruitment of participants, ethical considerations, the research context and the researcher's relationship with participants and within the field (Sections 10.4.4-10.4.6). Therefore, this allows the reader to determine their own view on the extent to which any findings could be transferable within the wider realm of school environments (Creswell, 2012).

10.4.4 Confirmability (objectivity)

Confirmability of the research undertaken is examined with regard to the degree to which the researcher has ensured that their own personal perspectives and values do not influence the research (Bryman, 2016). The researcher plays a significant part within any qualitative research study, throughout data collection and the analysis process and the "research is only as good as the investigator" (Morse et al., 2002 p. 10). Thus, their personal characteristics, values, prior experience in the subject area will have shaped the study itself (Creswell, 2013). To strengthen the confirmability and credibility of the research, researchers involved in qualitative research should demonstrate a critical appraisal of their own assumptions, prior experiences and the extent of their own participation within the research and in relation to the knowledge generated by the study in the data analysis process; this is known as reflexivity in research (Bryman, 2016). It is also important for the researcher to consider their relationship with the participants and whether this relationship has impacted on the data collection itself or if there has been potential influence on the participant responses. As such, there were certain issues relating both to the nature of the researcher's previous experience which could have potentially impacted on the data collection and analysis, whilst issues concerning power relations between the researcher and child participants. These issues form the focus of the following commentary.

10.4.5 Prior architectural experience

Within this research, the aim was to investigate and understand children's experiences in spaces at school. Considering the researcher's architectural background, it was imperative that the researcher maintained an objective view when trying to understand participants' experiences and interpretations. The challenge can be complex, as Groat and Wang (2013) suggest, the difficulties of being objective are heightened when architects become the researchers, as there is a danger that the architect could have pre-determined views on related matters. To mitigate this to some extent, triangulation of the data was made possible by using a variety of methods and a cross-examination of the data was conducted during analysis. Triangulation of data assists in ensuring the confirmability of the study, whereby more

than two methods are used in conjunction with each other, corroborating the evidence from varying sources (Silverman, 2011, Creswell, 2012, Bryman, 2016).

Additionally, the researcher attempted to question and probe the children further if something was discussed that was surprising or unusual during the participatory studies, in order to obtain a deeper, rich description of their perspectives and experiences. The researcher kept a fieldwork journal recording thoughts, feelings and potential influences on the data. This journal was then used to refer back to during the data analysis whilst being self-reflective during the whole process. Nevertheless, it is important to note that the nature of the research topic and the researcher's architectural background cannot be completely separated and thus, perspectives, biases and assumptions cannot be completely eliminated in this qualitative study (Corbin and Strauss, 2015).

10.4.6 Power relations

Issues concerning power relations between the children and the researcher can be considered one of the biggest challenges when researching with children (Morrow and Richards, 1996). Children inherently wish to please adults and as such, in an interview situation, this can result in "nonsense answers", offering responses which they think the researcher wants to hear (Eide and Winger, 2005 p.82). In participatory research, children are seen as 'experts in their own lives' (Langsted, 1994, Clark et al., 2005). Nevertheless, Morrow and Richards (1996) note that children can be seen as competent participants, comparable to adults, however, the ethical issue is that social differences between child and adult researchers are not always addressed (ibid). Therefore, it was necessary to manage this effectively when conducting the participatory studies. One of the main issues related to power relations, was the fact that the children had been told that the researcher was an Architect, thus, the children looked to the researcher as a person of authority. As such, the children at times would ask questions back to the researcher; for example, "what do you think needs improving in our school?" When instances such as this became an issue, the researcher attempted to defer the question back to the children asking the children to draw their thoughts on the subject instead.

It was also important that children were made to feel comfortable and at ease with the researcher and developing this trust became important in forming a respectful relationship with the child (Eide and Winger, 2005). In this case, the initial observation phase had allowed children to become familiar with the fact that there was a researcher in school. Following this, sessions were planned so that the focus groups were conducted prior to the child-led tours, allowing for the researcher to build a rapport with the children beforehand. It also became important for the researcher to carefully consider when was appropriate to interject and steer conversations, as children strayed off-topic and sometimes focused on things that may not necessarily be of relevance. However, this was practised with caution during the participatory studies, as the researcher wished to maintain a good relationship with the children, letting the children express their own thoughts and allowing children to construct their identity as someone of value in the research (ibid). By adopting participatory methods, encouraging children to interpret their own data, it has in itself mitigated some of the power relational issues that arise when conducting research with children (Morrow and Richards, 1996).

10.5 Limitations

It is important to recognise the limitations of any piece of research. The number of schools and participants involved in this study were limited and were based in one county, in Nottinghamshire, England, thus, the findings of this study cannot be generalised to all other new primary schools in the country. Although it is acknowledged that the findings are limited, there was an attempt to minimise variables through the case study selection criteria developed. However, even though schools were located in similar sub-urban contexts, the actual social demographics may have differed, which may have led to differences between schools. Additionally, the study is limited by the views of children that were the focus of the study, who were aged between 8 to 10 years old (see Chapter 4). However, children attending the schools ranged from 2 to 11 years old. Within this period of a child's life, they are developing rapidly and therefore, it is noted that the findings may be entirely different depending on the age of children consulted.

The study focused specifically on children and has revealed useful observations about their experiences in new school buildings. Reasons for seeking only children's views have been explained. This was due to both the gap in the literature and when undertaking the pilot study, it was felt teachers' opinions might influence the researcher's interpretations of children's comments. However, this in its very nature is a limitation of the study, and rather, post-occupancy should involve all users in the process to get a true holistic picture of the ways in which new school buildings might impact on the users. Evaluation techniques should be developed further and focused on the different user groups of the school, extending to parents and the community.

A further limitation is that children (and other users) can only draw on their own experiences and perceptions are based on existing environmental knowledge. As such, there is potential for issues to have been missed in the schools because the children do not consider them important, whereas teachers and staff, on the other hand, may identify other issues. Equally, children reported "*getting used*" to classroom spaces, suggesting that children can become comfortable in their school environment and thus, there is potential that latent issues go unnoticed. Furthermore, when considering children's ability to draw only from their own experiences, the 'newness' factor of these environments should also be noted here. The fact that the case study buildings were all relatively 'new' buildings could have impacted on children's positive perceptions of their schools. This is an inherent limitation of the research question itself, whereby there may be a type of cognitive bias, similar to the 'halo effect' (Thorndike, 1920) where overall impressions can influence opinions of an individual's character. Thus, the overall impression of the school building may influence how children are thinking and feeling. This is also known as the "physical attractiveness stereotype" and the notion that "what is beautiful is good" (Lewis-Beck et al., 2004 pp.451-452), where feelings can overcome cognitions and this may cause accentuated positive attitudes towards the schools.

10.6 Implications and future research avenues

Studies have addressed how schools can potentially impact on learning, attainment, engagement and well-being, however, there appears to be a lack of studies that actually consult with children to gather perspectives on their experiences at school.

This thesis has indicated that children's views are valuable for understanding how school buildings impact on their daily lives at school. Furthermore, this thesis also indicates that the integration of research and practice could be beneficial for school design. It is recommended that post-occupancy evaluation involves children as users as well as all other users of the school building. Participatory design has been advocated in school design processes and whilst this can be successful in providing environments that are more suited to needs, assessments need to be conducted on the current state of new schools that are being designed and constructed. The tools employed in this study could be adopted and modified by researchers or architects alike in both academic research and in post-occupancy evaluations of primary schools. Some researchers have begun to investigate ways of doing this through doctoral research (Ghaziani, 2009, Newman, 2009). However, there are limited studies where such participatory techniques are tested, verified and incorporated into post-occupancy evaluations[1]. Wheeler and Malekzadeh (2015) have attempted to do so, involving all school users, however, this POE study remained focused on energy performance (as do many others) and was only trialled in three secondary schools, with limited children from each year group.

As noted earlier in this chapter, this research focused on a limited age range, with participants being aged between 8 to 10 years old. The approaches adopted for consulting with the children were tailored to children within this age range following the pilot study. Further research is required to establish appropriate methods for engaging with other age groups in primary schools in order to obtain their views on the school environment. Furthermore, children with special educational needs or disabilities may provide different insights and the research tools may need to be adapted in future investigations.

Two of the key findings of this study that would be interesting to explore in further research projects are: technology in schools and the use of external environment for learning. The use of technology in different spaces within schools is worth investigating; does the environment in which technology is used make a difference to children's learning experience? Additionally, children have revealed their positive

[1] For example, a search on 'Web of Science' (August 2017) with the key search terms "*post-occupancy evaluation*" and "*children*" and "*school*" between 2010 and 2017 returns only 12 results.

learning experiences in external environments at school, therefore, this could also be an area to be investigated further, and particularly whether there are lessons to be learned for the design of internal spaces.

Reviewing the outcomes with architects and designers was considered in the development of the methodology for this research, however, this was not possible due to the timeframe of the study. In future, this type of evaluation could be carried out in conjunction with the designers who will be developing designs for the next schools and ultimately, there is a wide range of new building stock which needs to be evaluated ahead of school building programmes. However, there are potential issues that would be necessary to consider, in terms of timescales and funding sources for this to be implemented in the wider context of school design. At the very least, efficient approaches for the dissemination of the research (and future research) should be employed, to ensure architects and designers are provided the findings as part of evaluation processes.

10.7 Concluding remarks

It has been acknowledged that children are experts in their own lives (Langsted, 1994, Clark et al., 2005) and this thesis has confirmed that children are incredibly sensitive to their environments and are able to relay their perspectives to adults. This research has been successful in meeting the main research aim, obtaining children's views about their new primary school environments and it has identified a number of factors and characteristics, related to school buildings and associated environments, which can impact on their experiences at school.

As the RIBA Plan of Work 2013 indicates that post-occupancy evaluations are to be conducted to obtain client feedback beyond completion, involving children as key stakeholders in the evaluation process is essential. Obtaining children's perspectives and insights into their spatial experiences, in newly constructed school buildings is important and their views should be valued as part of this post-occupancy evaluation process. Considering the extent of new school buildings that have been procured over the past two decades, it is argued that perhaps it is even more important now, to evaluate how this current wave of school buildings are impacting on their users. This thesis has highlighted the importance of understanding the positive and negative qualities, from the children's perspective. Involving children in the evaluation process, can make a contribution to improving school environments in future projects, in line with the evolving needs of the users.

To conclude, reference is taken from comments made by Flutter (2006), with respect to the positives of children's participation, in creating better school environments:

> "But we have to remember that, for students, the physical conditions of school are often the familiar face of a much deeper set of issues about respect – feeling that you matter in school, that you belong, that it is 'your' school and that you have something to contribute" (Flutter, 2006 p.191)

This emphasises the potential positive impact, that involving children in evaluating their own schools, can have on the children themselves and the importance of understanding the holistic values and implications of a school environment. Finally, returning to comments made by Layla, at School B, this thesis has shown that the

children care about their “whole school” and each and every part of this environment can have an impact on their experiences of school:

Figure 10-1 The "whole school" by Layla, School B

“Here's the whole school - that's important to me because it's a place where we learn and it's a place where we get educated. It's important to take that picture to say that it's not just different parts of the school that we care about, it's all of it...'cus that's the place we learn”

Layla, School B,

Phase 2 Child-led tour

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Appendices

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Appendix A

Scoping study

Appendix A: Scoping study school visits

School level	School type	Location	Building characteristics	Additional observation notes
Primary and Nursery school	State school	Suburban, Nottingham	Two Victorian school buildings separated and surrounded by a walled playground	The whole school were moving to a new build school in September 2014
Lower school	Private school	Rural, Essex	Housed in a Victorian building and was surrounded by a large area of land in which the children can play and have lessons. The overall feel of this school was "homely" and the large Victorian windows allowed the classrooms to be flooded with light	Located in this rural setting, the school placed significant emphasis on outdoor education and the Forest Schools curriculum. There were mixed-use spaces and the opportunity for the community to use parts of the school
Preparatory school	Private school	Rural, Essex	Large school within a village complex, housed in some very old buildings (c. 1894) which have been expanded and refurbished over many years with the most recent addition being the new build nursery, opening in 2012	Interesting conversations conducted with current teachers in the new building; they had some issues with elements of the design through post-occupancy use. It was interesting to note that none of the teachers at the school had had any input or contact with the architects throughout the design and construction of the building. Located in a rural setting; emphasis on outdoor education running "The Forest Schools" curriculum. A variety of mixed-use spaces available for community use to some areas of the school

Primary school	State school	Suburban Nottingham	A small primary school based in a village which was designed and built less than forty years ago (1980s). Originally, the school was designed to be "open plan" around a central quad, with minimal doors and only a notional corridor space; a design method that became popular in the 1970s. Since the original build, it has been adapted over the years due to the needs and wants of the building users; however, the school's ethos is to maintain the open plan feel as far as possible. The teachers and Head Teacher, in particular, believed that this school layout works very well with only minimal disturbance from the associated acoustic issues. The majority of the walls that face onto the courtyard are glazed and openable which allows for suitable cross ventilation into classroom areas, however, in some areas the spaces currently lacked sufficient daylight	Children were free to wander around the school as they wished and work in an area outside the classroom if they wish to work in a quieter space. This freedom seemed to create a relaxed atmosphere. At the time of the visit, the school were imminently having all windows replaced with double glazing to assist with heat loss and ceilings replaced, introducing additional insulation throughout

Primary school & Secondary schools	Academy	Suburban Nottingham	The new build schools visited were almost identical in terms of interior appearance, with clean, simple interiors with a sense of the corporate identity both internally and externally. Classroom spaces were light and airy; corridors were long and clear of visual stimulus, adding to the commercial feel to the school as a whole. The primary school was very similar in appearance to the secondary school but with the addition of more break out spaces and learning taking place outside the classroom	The schools seemed to provide adequate classroom space which were well lit, however, there was very much a professional ethos to these schools, with very minimal work on display and any colour present was specific to the school branding. Stark in contrast to the previous schools visited
Primary school	State school	Suburban Nottingham	New build school under the BSF programme, officially opened in 2011. The original school consisted of the Junior and Infant schools being located on separate sites. Mechanical services and structure for the building is intentionally exposed for children to see as described by the Deputy Head Teacher In addition, there was a wealth of external spaces for the children to use, including allotments where children grow food for eating in the school	Located in an area of social disadvantage but being labelled as an "exemplar" school design at the time. The concept behind this new build school was to design a school which could bring about changes to the teaching practice whilst enhancing and integrating with the new curriculum. Staff and pupils were all involved in the generation of the design brief through workshops and design projects to generate new ideas for the school

Appendix B

Pilot study

Appendix B: Pilot Study timetable

Plan for Pilot Study at XXXX Primary and Nursery School								
	AM Session 1 8.45--10.00am	BREAK TIME 10-- -10.15	AM Session 2 10.15-- -12.00pm	LUNCH 12-- -12.45pm	PM Session 1 12.45-- -2.00pm	BREAK 2-- -2.15pm	PM Session 2 2.15pm-- -3.15pm	AFTER SCHOOL 3.30-- -4.30
Monday 14th July 2014	Child led tours x 2 with 2 children per tour Approx. 35mins each Includes review of photographs after tour of the building **TOTAL TIME: 1HR 10MINS** **TOTAL CHILDREN: 4**	Observation	Child led tours x 2 with 2 children per tour Approx. 40mins each Includes review of photographs after tour of the building **TOTAL TIME: 1HR 20MINS** **TOTAL CHILDREN: 4**	Staff interview	Child focus group drawing activity with 4 children per group Approx. 45mins each. Includes drawing together on a large sheet or paper and recorded discussion. **TOTAL TIME: UP TO 1HR** **TOTAL CHILDREN: 4**	Observation	Child focus group drawing activity with 4 children per group Approx. 45mins each. Includes drawing together on a large sheet or paper and recorded discussion. **TOTAL TIME: UP TO 1HR** **TOTAL CHILDREN: 4**	Staff interview
Tuesday 15th July 2014	Observation	Observation	Observation	Staff interview	Observation	Observation	Observation	
Wednesday 16th July	N/A	N/A	N/A	Staff interview?	Additional focus group or child-led tours with children if necessary **TOTAL TIME:** **UP TO 1HR 10 MINS TOTAL CHILDREN: 4**	Observation	Additional focus group or child-led tour with children if necessary **TOTAL TIME: UP TO 1HR** **TOTAL CHILDREN: 4**	Staff interview
Thursday 17th July 2014	N/A	N/A	N/A	N/A	Observation	Observation	Observation	
Friday 18th July 2014	Observation	Observation	Observation	Staff interview	Observation	Observation	Observation	

Appendix B: Trial drawing prompts for pilot study focus groups

About the school:

- Draw a picture of the school
- Draw one of the school buildings

Likes:

- Draw a place you like in your school
- Draw your favourite place at school

Dislikes:

- Draw a place you don't like
- Draw something you don't like about the school

Places for specific activities:

- Draw a place you remember being a good place to learn in
- Draw somewhere to go to be on your own or have some quiet time

The new school:

- Draw what you would like in the new school building
- Draw something you would like to take with you to the new school from this school

Additional drawing prompts suggested by the children:

- Draw the most fantastic place
- Draw the stinkiest place?
- Draw which school building you like the most?
- Can we draw our favourite animals?
- Can we take you on a tour of the school?

Appendix B: Semi-structured interview guide:

Your Existing School Environment:

Outline Interview Questions: July 2014

- Thank you for agreeing to be interviewed. I understand that your time is important. The interview should last about 45 minutes in total.
- Introduce myself and the background to the research.
- Explain the information sheet
- Explain that I would like to record the discussion and that the discussion will be confidential. I will not be presenting a name beside what you say in my notes.
- Remind the participant that they have the choice to withdraw from the interview at any time and if they wish for the data to be no longer used it will be destroyed.

Background

Explain the plan to conduct interviews now for the pilot study in the existing school building with a range of staff members and the potential of a future study when the school have moved to the new building. The interview will take the form of questions under various topics with the aim of understanding your views on the following:

- The general school environment
- Your classroom/work space and its pros and cons
- The new school building and improvements you hope to see
- Your thoughts on what makes a good school?

The purpose of these interviews is to provide an understanding of the views on the different aspects of the current school environment and views on the necessary improvements that are required. Remind the participant that there are no 'right' or 'wrong' answers and I am keen to hear their thoughts.

A. THE GENERAL SCHOOL ENVIRONMENT

1. Can you describe this school building in three words? Explain?
2. What aspect do you like most about the school building/what is your favourite place?
3. What do you dislike about the school building/what is your least favourite place?
4. Do you think the layout of the school building is successful?
5. Can you describe the ancillary spaces?
    - For the children to socialise (ie. Other than outdoors)?
    - Where do you go for your lunch break?
    - Are there any group work rooms?
6. Do you think the school environment has an impact on the children? In what way?
7. Have you taught in any other schools?
8. How does this school compare to others?

B. THE CLASSROOM ENVIRONMENT

1. Can you describe your classroom in three words?
2. Can you explain why you have answered with these words?
3. Can you explain how you use the classroom on a typical teaching day?
    - Is the shape/size appropriate?
    - Is the temperature/lighting appropriate?
    - Is there enough furniture/wall space?
4. What do you like most about your classroom?
5. What do you dislike most about your classroom?
6. How do the children use the classroom?
7. Have you taught in any other classrooms?

C. WHAT MAKES A GOOD SCHOOL?

1. In your opinion what do you think makes a good school environment?
2. In your opinion, what are the most important factors in the school that aid teaching?
3. In your opinion, what are the most important factors that affect the children's learning?

D. THE NEW SCHOOL PROPOSALS

1. Are you aware of the new school building proposals?
2. Have you been consulted on the design of the new school building throughout the process?
    - To what extent?
    - What did this involve?
3. What improvements are you hoping for in terms of your classroom?
4. What improvements are you hoping for in the new school building generally?
5. Do you think the new school building will benefit the children? In what ways?

Thank the participant very much for their time and cooperation.

Please feel free to contact me about the study in future.

Appendix C

Observation field notes

Appendix C: Example observation field notes

Phase 1: Observation
Case study site: School A Primary School, Nottinghamshire
Duration of Observation: 3 days
Dates: 24th November, 26th November, 27th November 2014
Weather: Cold and wet most of the time
Method of data collection: Field notes and photographs

Observation Schedule			
Date	Time	Location	Activity being observed
Monday 24/11/14	AM	The hub, playground and school entrance gates	Breakfast club & arrival at school
	AM 1	Year 3 classroom	Science lesson – S. Board
	AM BREAK	Playground	Playtime
	AM	Hall	Assembly
	AM 2	Year 3 classroom	Reading lesson – S. Board
	LUNCH	Playground	Lunch playtime
	PM 1	Year 4 classroom	Writing task
	PM BREAK	Playground	Playtime
	PM 2	Year 4 classroom	Science lesson
	PM	Playground	Leaving school
Wednesday 26/11/14	AM	The hub, playground and school entrance gates	Breakfast club & arrival at school
	AM 1	The hub / Year 5 classroom	First Aid session with St John's Ambulance
	AM BREAK	Playground	Playtime
	AM	Hall	Assembly
	AM 2	Year 1 classroom	Maths lesson
	LUNCH	Hall	Family service dinners KS1&KS2
	PM 1	Year 2 classroom	Maths lesson
	PM BREAK	Playground	Playtime
	PM 2	Year 2 classroom	Art/crafts wrapping paper
	PM	Playground	Leaving school
Thursday 27/11/14	AM 1	Year 6 classroom	Spellings & Maths
	AM BREAK	Playground	Playtime
	AM	Hall	Assembly
	AM 2	Reception classroom / community room	Making a sandwich / reading time
	LUNCH	Playground	Lunch playtime
	PM	Allotment area	Forest Schools – Fire building

School Day Timetable:

07.45 – 08.45	Breakfast club
08.45 – 10.00/10.15	AM Session 1
10.00 – 10.15	KS2 Break
10.15 – 10.30	KS1 Break
10.15/10.30 – 11.45/12.00	AM Session 2
11.45 – 12.45	KS1 Lunchtime
12.00 – 12.45	KS2 Lunchtime
12.45 – 13.45	PM Session 1
13.45 – 14.00	KS1 Break
14.00 – 14.15	KS2 Break
14.00/14.15 – 15.15	PM Session 2
15.15	School finishes

Supplementary information:
Sketch plans of classrooms
(Field notebook)
Building layout plan with key notes
Site plan recordings of outdoor activities
(13 no. Sheets)

Other general information observed:

Classrooms have white painted walls with grey architraves, windows and door frames. Timber doors to the classroom with silver ironmongery. Green/turquoise/sea green painted feature walls in classrooms. White PVC windows throughout the school building. White sink units with beech effect worktops. Rooflights in every classroom.
Planting to outdoor areas is not yet complete. Workmen were on site during observation period carrying out landscaping works.

Monday 24th November 2014
Observation activity: AM Session 1 Year 3 Classroom
Time: 9.30 – 10.00am
Location: Year 3 classroom
Approx number of children: 24
Number of staff: 3
Activity: Science lesson
Supplementary information: Sketch plan of classroom
Other notable information: School heating is broken. There is a working wall display with post-it notes
Weather/room temperature: Room is warm even though heating is broken.

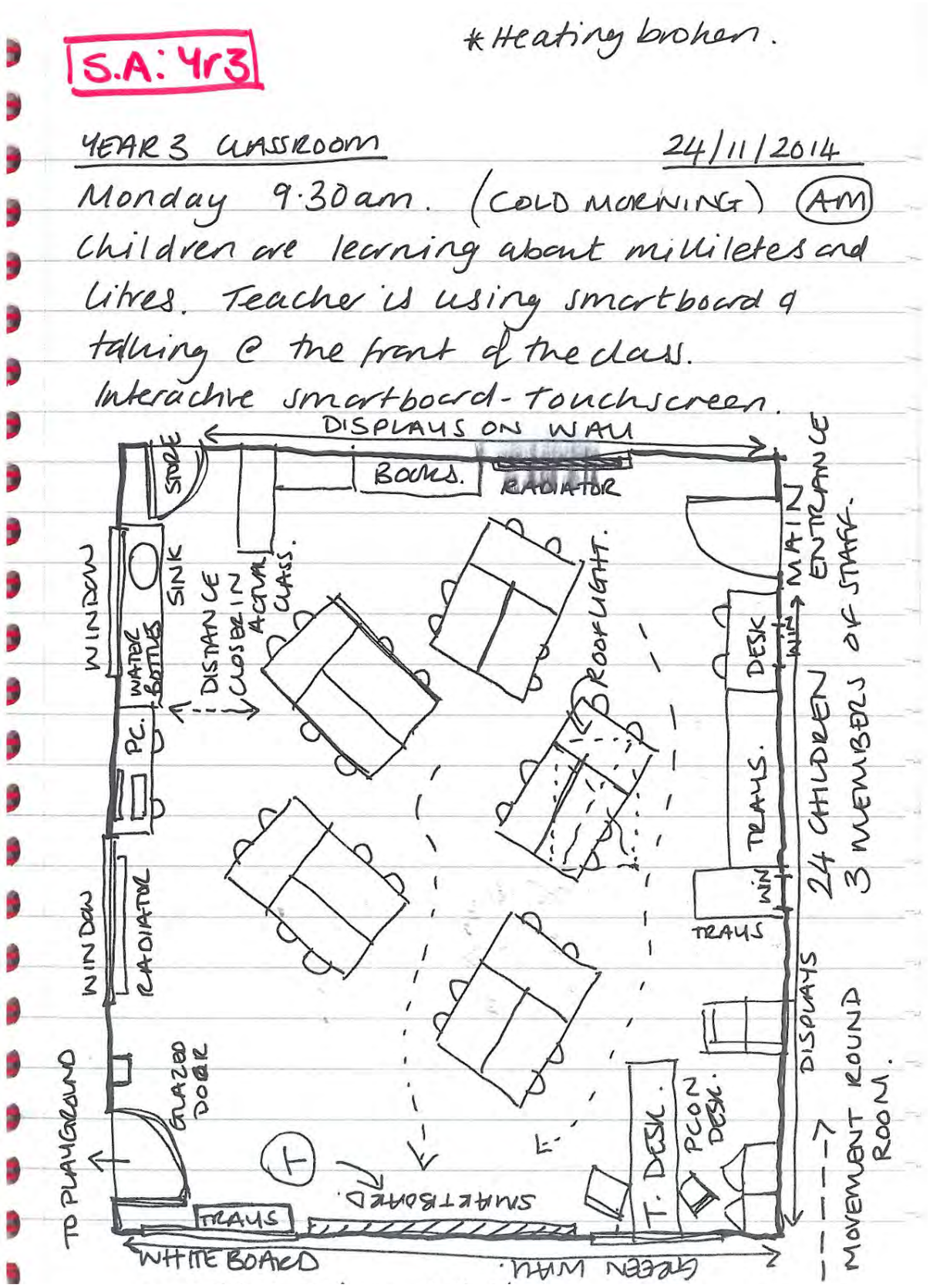
Children learning about millilitres and litres by using interactive smart board (touchscreen).
The teacher is located at front of classroom using the smart board and children are sat around tables.
Teaching assistant working at desk to the side of the classroom with a child.
Another teaching assistant moving around the classroom working at tables with specific children.
Teacher asks questions and selected children then come up to the front of the classroom to use interactive smart board. Children mostly move through the centre of the classroom. Children also using small whiteboards at their tables to write answers/notes. In the centre of the tables are boxes with all their pens and whiteboards. There is apparent excitement at using the smart board with children eager to be selected to come and use the screen.
Children's books are kept in trays to the edges of the room. Children collect the books and give them out around the room when teacher has finished with the teaching at the front.

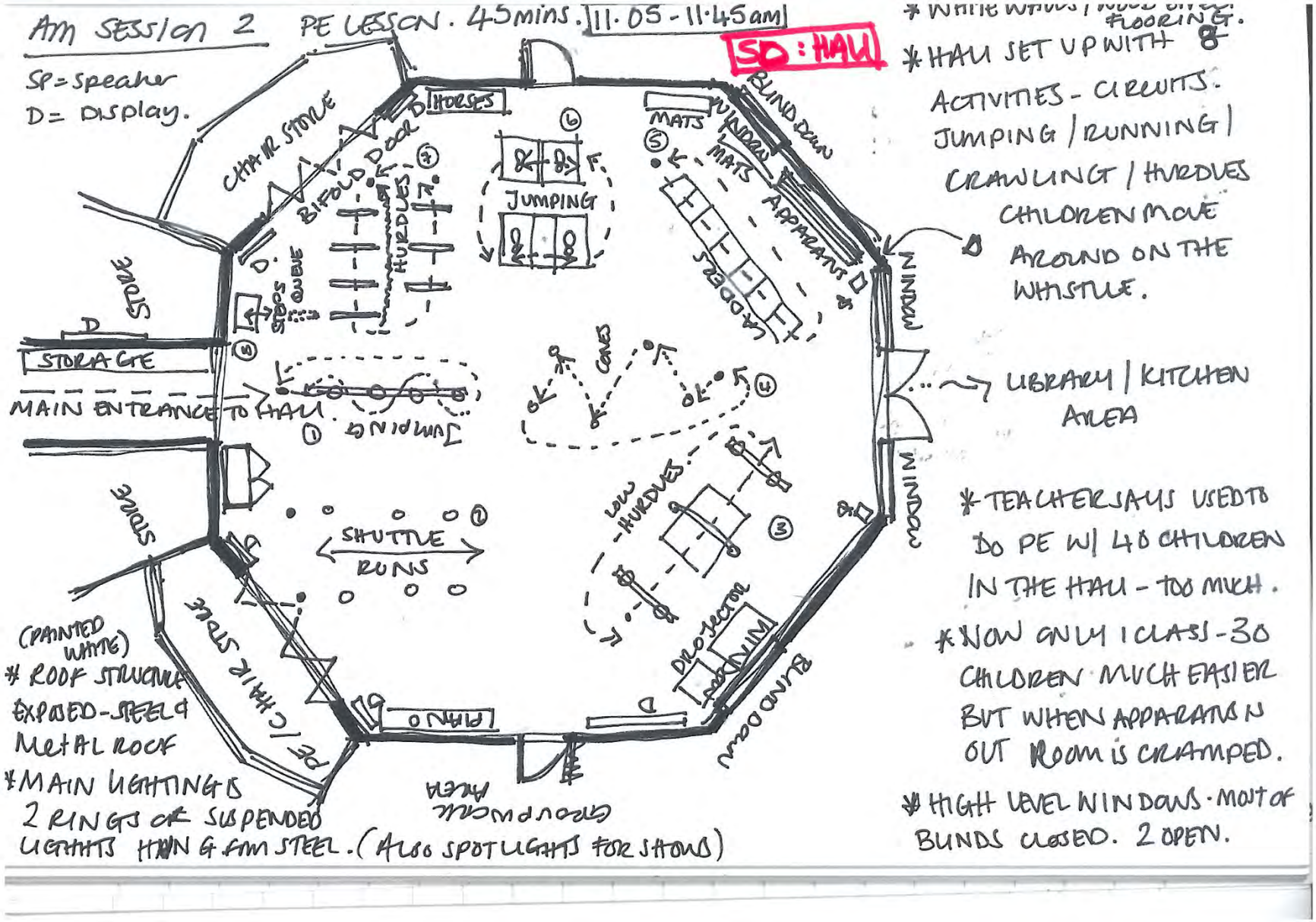
9.45am
Teacher opens the external door, presumably to get some fresh air in. With the door open this now seems to cause discomfort for some children's eyes. The door has displays on it that appear to shade the classroom when the door is closed. Teacher then shuts the glazed door to shade the children from the sun and opens the windows instead.
TA is now working with child at the PC desk. Children are doing maths and sums in their books at tables. Teacher and TA are walking round the classroom helping certain children to do the work. Children are relatively quiet in the classroom and working on their own.

10.00am
Children line up at the door for break time. The main internal classroom door is used to exit for break time rather than the external playground door. Children get their coats from their trays (within the classroom space) and then line up at the door.

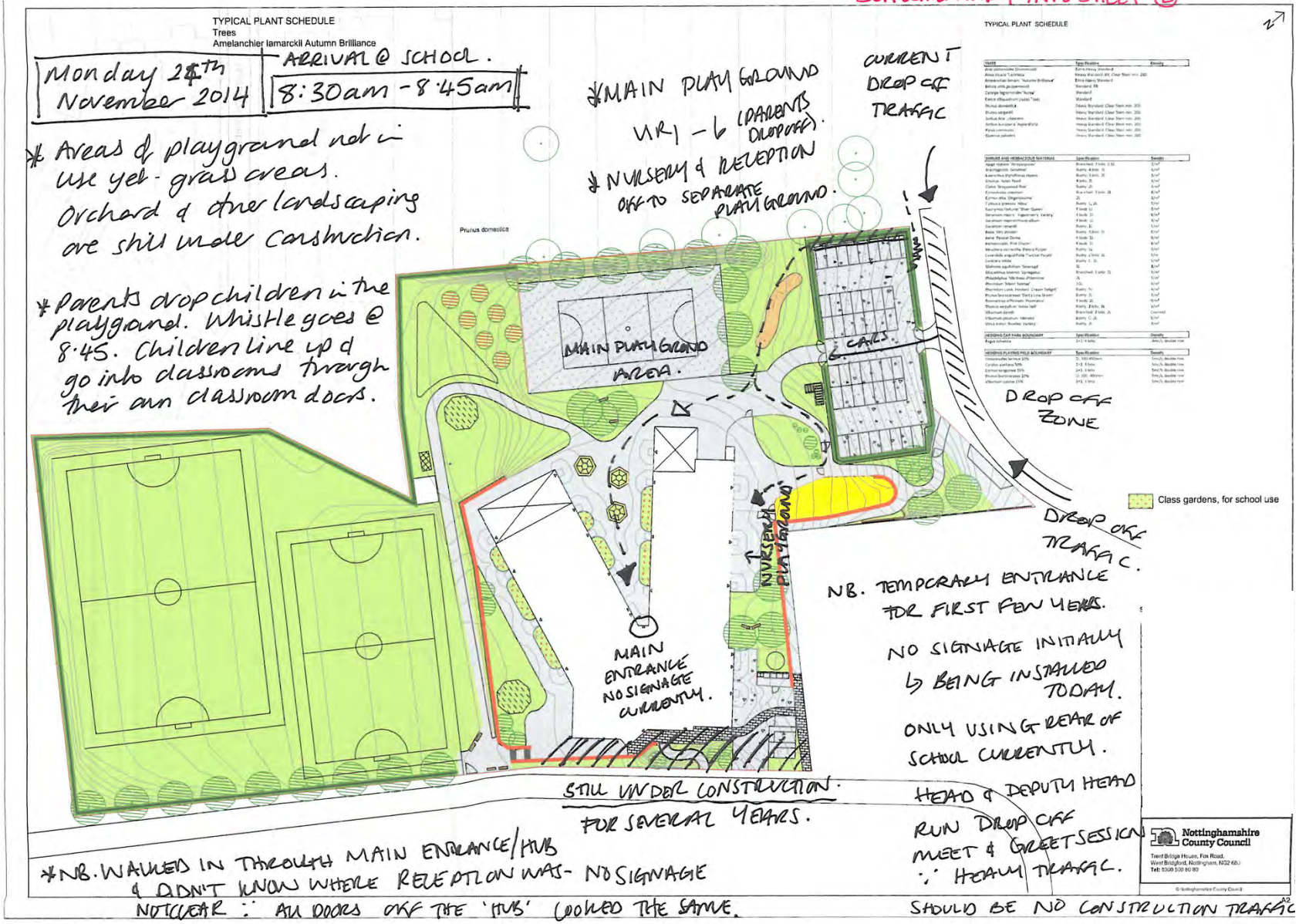
10.15am – 10.30 (After break time)
Children finish off their earlier work around the tables in the classroom
Assembly is at 10.30 – rehearsal assembly for official school opening.
Children line up again at the internal classroom door ready for assembly and exit the classroom to the hall.

Appendix C: Example observation sketches




AM SESSION 2 PE LESSON. 45mins. 11.05 - 11.45am
SD : HALL
SP = Speaker
D = Display.
CHAIR STACK
BIFOLD DOOR
HORSES
HURDLES
JUMPING
MATS
WINDOW
BLIND DOWN
APPARATUS
LADDERS
STAGE
STEPS
WOBBLE
STORAGE
MAIN ENTRANCE TO HALL
TUMBLING
CANES
SHUTTLE RUNS
LOW HURDLES
PROJECTOR
SCREEN
PIANO
PE CHAIR STACK
GROUP WORK AREA
(PAINTED WHITE)
* ROOF STRUCTURE EXPOSED - STEEL & METAL ROOF
* MAIN LIGHTING IS 2 RINGS OF SUSPENDED LIGHTS HUNG FROM STEEL. (ALSO SPOTLIGHTS FOR SHOWS)
* WHITE WALLS / WOOD EFFECT FLOORING.
* HALL SET UP WITH 8 ACTIVITIES - CIRCUITS. JUMPING / RUNNING / CRAWLING / HURDLES
CHILDREN MOVE AROUND ON THE WHISTLE.
LIBRARY / KITCHEN AREA
* TEACHERS/AIDS USED TO DO PE W/ 48 CHILDREN IN THE HALL - TOO MUCH.
* NOW ONLY 1 CLASS - 30 CHILDREN MUCH EASIER BUT WHEN APPARATUS IN OUT ROOM IS CRAMPED.
* HIGH LEVEL WINDOWS - MOST OF BLINDS CLOSED. 2 OPEN.

SUPPLEMENTARY INFO SHEET (2)



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Appendix D

Scrapbooks

Appendix D: Examples of scrapbook pages

School Environment Scrap Book

Name:

Age:

Class:

What is the Scrap Book for?

This scrap book is part of the research project on your school.

It would be good if you could fill this in before we meet again next term.

Each page has a question or topic for you to think about which is to do with your time at school and the places around school which you use at different times.

You can complete the scrap book by doing drawings, writing down your thoughts or sticking things in it.

We will also look at any of the photos you take around the school next term, and you can add these to your scrap book when we meet again.



Do you want to do the scrap book?

You can say yes or no. It is up to you whether you fill out the scrap book.

If I complete the scrap book:

- I understand that the scrap book will be looked at by Lois and may be used for her project work.
- I understand that I can stop doing the scrap book at any time.

If you understand the statements above, you now need to decide **whether you would like to take part and fill out the scrap book.**

Please put a circle round No or Yes.


No


Yes

Name:

Age:

Signature

Thank you for taking the time to read this information and for your help in my project.

Your school building...

What does your school look like?

Do you like your school building?

What do you like about it?

Is there anything you do not like about it?

Draw a picture of your school

Where is your classroom?

Can you locate your classroom on the drawing opposite?

Can you name any other rooms on this drawing?

Your journey to school...

How do you get to school?

What do you remember from your journey to school?

What do you think is important on your journey to school?

Draw something you like on your journey to school?

Good places at school?

What is the most important thing to you in your school?

Where do you feel good or happy in school?

What do you think makes you happy in these places?

Draw 2 of your favourite places at school

Places to learn at school?

What is good about your classroom?

What is not so good about your classroom?

Are there places other than the classroom where you like to learn?

Where do you think is the best place to learn in? Why?

Photos of your school...

(We can add to this section at the next session)

Notes...

Photos of your school...

(We can add to this section at the next session)

Notes...

Appendix D: Example of scrapbook data tabulation

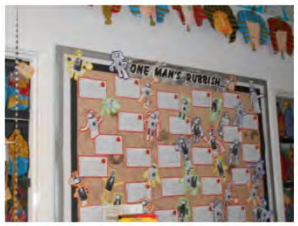
Scrap Books Summary of Questions School D			
Good places at school?			
Question	***Written responses Phase 2 (as written by participants)***	***Additional written responses Phase 3 (as written by participants)***	***Field notes (written by researcher during interviews & FGs) Note: May include other children's views***
What is the most important thing to you in your school?			
D01	The most important thing to me in school is my classroom		Why? Because it's where the learning is. Class is really fun. Teacher is really happy which makes class fun More interesting when teacher is fun
D02	No response	My class and the Muga	Class and MUGA: Feel safe in the classroom and it teaches people MUGA - safe, loads of friends there and it has fences
D03	No response		
D04	The most important thing to me in school is my classroom, because it is a place where I can learn and also see my friends most of the time		Smart board is the most useful thing - it helps you learn
D05	Learning and having fun		Special because no point in going to school and having nothing to do Playtime is a really good thing
D06	Learning and having fun		If you don't learn - you won't get a good job If you don't have fun - you won't interact with other people On the playground - interaction with people
D07	Learn		If you want to get a good job to do well at school Have a little break at break time and a bite to eat

D08	The fire alarm because if we didn't have a fire alarm we would never know if there was a fire		
D09	Class and playground		Because I love school and love class Playground - can be free /big /spacious - helps to feel free A lot of children but doesn't seem a lot on the playground
D10	The thing that is most in my school is the trim trail, MUGA and playground are because I use them mostly		
D11	My classroom		Really good place to learn and sometimes can talk Sometimes need to be quiet Learn altogether and it's fun when we learn Science - don't just write, draw diagrams and pictures Sometimes on computers on power points
D12	Teachers, friends and learning		Because teachers teach us Friends help and play with me Learning - to get a good job
Total responses	11		
Total non-responders	1		

Appendix D: Example of scrapbook data tabulation

Scrap Books Summary of Photos School A		
Photos of your school		
Photo	*Written answers*	*Additional descriptions from audio recording*
A11		
Leah		
	I love this photo because I love the library and we didn't have a library in the old school	[00:41:21] Researcher: Tell me what the picture is first, and then tell me about your sentence. Leah: This is the library Researcher: Yeah Leah: And my sentence is, I love this photo because I love the library and we didn't have a library in our old school. I know we did but I can't remember. Researcher: Ok.
	I love this because I made with my friends in class	Leah: This is a picture of a robot that we made in our class. I love this because I made it with my friends. In class it should say. Researcher: Ok, yep.
	This tells you have a cool school	Leah: This is a picture of the main playground. This tells you, you have a cool school. Researcher: And why does that tell you, you have a "cool school"? Leah: Because we have got like, concrete, a basketball pitch, erm, we have got some crops growing up there, some grass, trees growing and to me that's lucky. Researcher: Ok. Leah: And erm, Researcher: To you that's lucky? Leah: Yes. Lucas: Lucky that we have grass
	I like this it is important because it is our school logo and it important to me!!	This is a picture of our logo round there. I like this, it is important because it is our school logo and it is important to me. Researcher: Why is that important, the logo? Leah: Because if we didn't have a logo...erm-- Researcher: Where else do you see your logo? Leah: There, and here. Researcher: On your clothes? Laura: Or on the news. Josie: I am on images on google.
	I like this photo because our whole school take part of making one	Leah: Right, I like this because we all made it as a school and I've put I like this photo because the whole school has taken part of making one. Researcher: Yep.
	I also like this photo because I love the new tech in our school	Leah: This is the ICT lab, er, I also like this photo because I love the new tech in our school. Researcher: Ok.

	I love this pic because all of our class made it as a team	Leah: Right, I like this because -- Researcher: What is that one? Leah: This is the -- this is er, a display of what we made in our class. I love this pic because all of our class made it as a team. Researcher: And that's the Andy Warhol one? Leah: Yeah.
	This pic tells you what the kids have been doing before school	Leah: Yeah. I like, I like this is a breakfast club display, it has changed a bit now, this tells you what kids do, what kids have been doing before school. And that's my last one.
	This is a photo of the wooden hut and it is also used for lesson and chilling at break	
	I like this photo because it is a pic of the field	
	I like this pic because it reminds me of my old TA	
	I like this pic because people now can place scooters and bikes and we didn't in the old school.	

	I like this photo because it is outside my classroom	
	This pic because it is the front of the school	
	I like this pic because it is all the staff in our school	
	This pic tells you our school makes the coolest displays	
	I like this pic because the hall is where assembly's are and where we eat	

Appendix D: Summary of photos selected for scrapbooks

School A

Spatial	External places and spaces	Internal spaces and places	Physical architectural elements
School A	Football pitch Field Outdoor classroom hut Fire lighting area Garden areas Various playground areas Place to rest	Hall Libraries ICT Suite Various classrooms Hub School office and waiting area Toilets Cooking room	Automatic door

Items & People	Wall displays	Physical displays	Facilities & technology	Objects	Signage	People	Miscellaneous
School A	Old school photos Artwork Wall graphics and facts Whole school artwork Work displays Staff photo board Attendance	Objects made by children as whole class activity	Bike Shelter Computers Smartboard Projector Printer room	Sweating tent in classroom Objects relating to nature eg. fish PE apparatus Outdoor bins Table top map Books Equipment Teacher's chair Dinner tables	School logo School name signage Entrance sign Class name Toilets sign	Friends Nursery children Teachers	Name on scrapbooks

School B

Spatial	External places and spaces	Internal spaces and places	Physical architectural elements
School B	Adventure playground Field Football pitches Pond Slide Red ropes Green ropes Poles Tyres Hill Courtyard Courtyard stage Hedgehog house Bug hotel Trees Apparatus on black pitch Foundation playgrounds Whole school	Dinner hall Sports hall PE Store Green room Classroom Group room Canteen Head Teacher's office Stage in hall Toilets Ocean room	Upstairs balcony in hall Coloured boards Corner of the school Walkway fence

Items & People	Wall displays	Physical displays	Facilities & technology	Objects	People	Miscellaneous
School B	Work on display Artwork on display Sports display Rules Attendance	Year 6 sculptures outside Children's bird feeders outside	Bike racks Computers Whiteboard in sports hall Interactive whiteboard	Fish tank PE apparatus Litter Trophy cabinet Tuck trolley Sports equipment Times tables board Drying artwork School app Boxes to store your stuff Dinner menu	People doing exercise Teachers	Name on scrapbooks

School C

Spatial	External places and spaces	Internal spaces and places	Physical architectural elements
School C	Tyre swings and monkey bars Reading pod area Football pitch Den Field Play park Foundation playground Basketball hoops Rock in play park Learning lodge School Farm The 'Caravan'	Classrooms Library Foundation DT room Hall Foundation area in corridor Museum Medical room Studio Rainforest room Toilet Small group room Care worker's room Office Reading corner in classroom	School building exterior

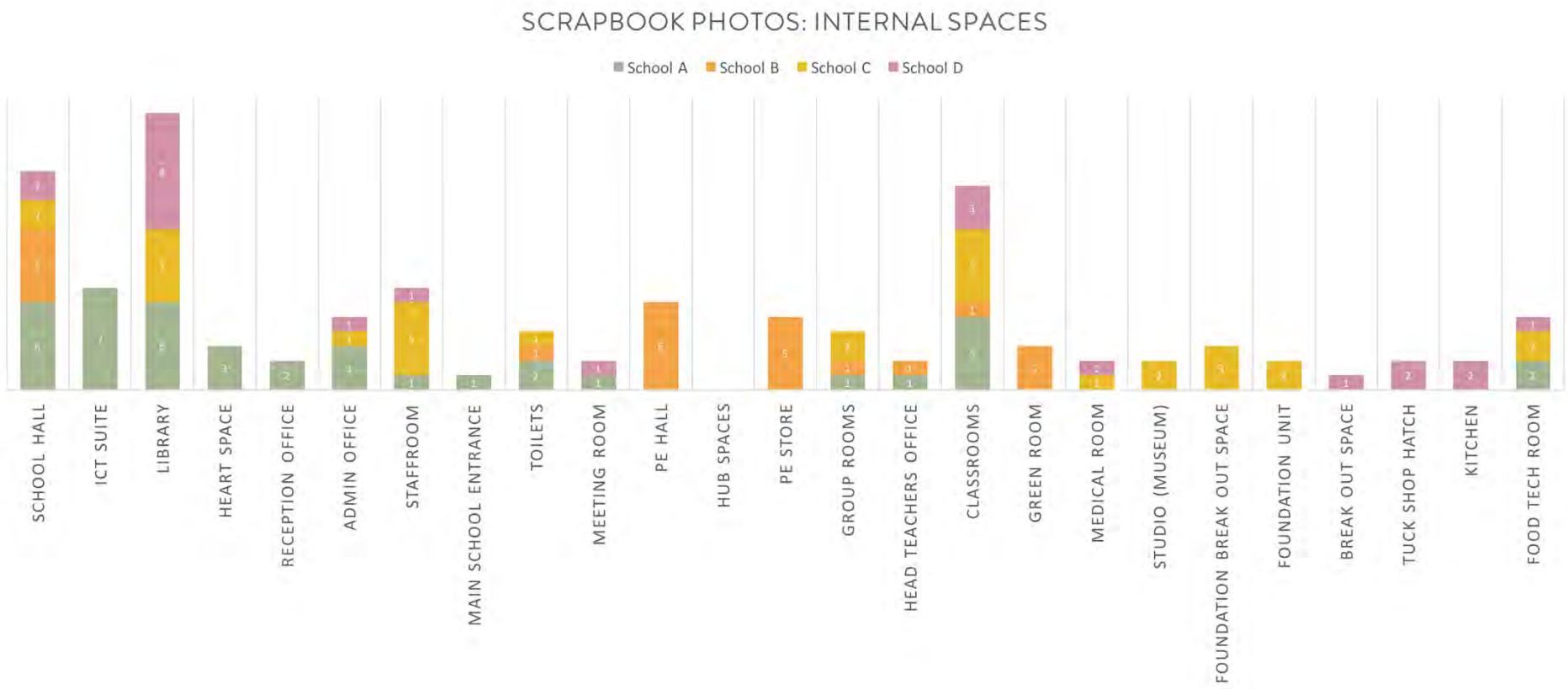
Items & People	Wall displays	Physical displays	Facilities & technology	Objects	People	Miscellaneous
School C	Reading Super League School field trips School rules Golden integrity award Work displays Artwork Teacher display Maps	Flags in hall Hanging bikes in studio	Laptop trolleys	Trays to keep stuff Duck Instruments Dinner menu School plaque Toys and equipment Piano	Foundation children Medical people Friends	Name on scrapbooks

School D

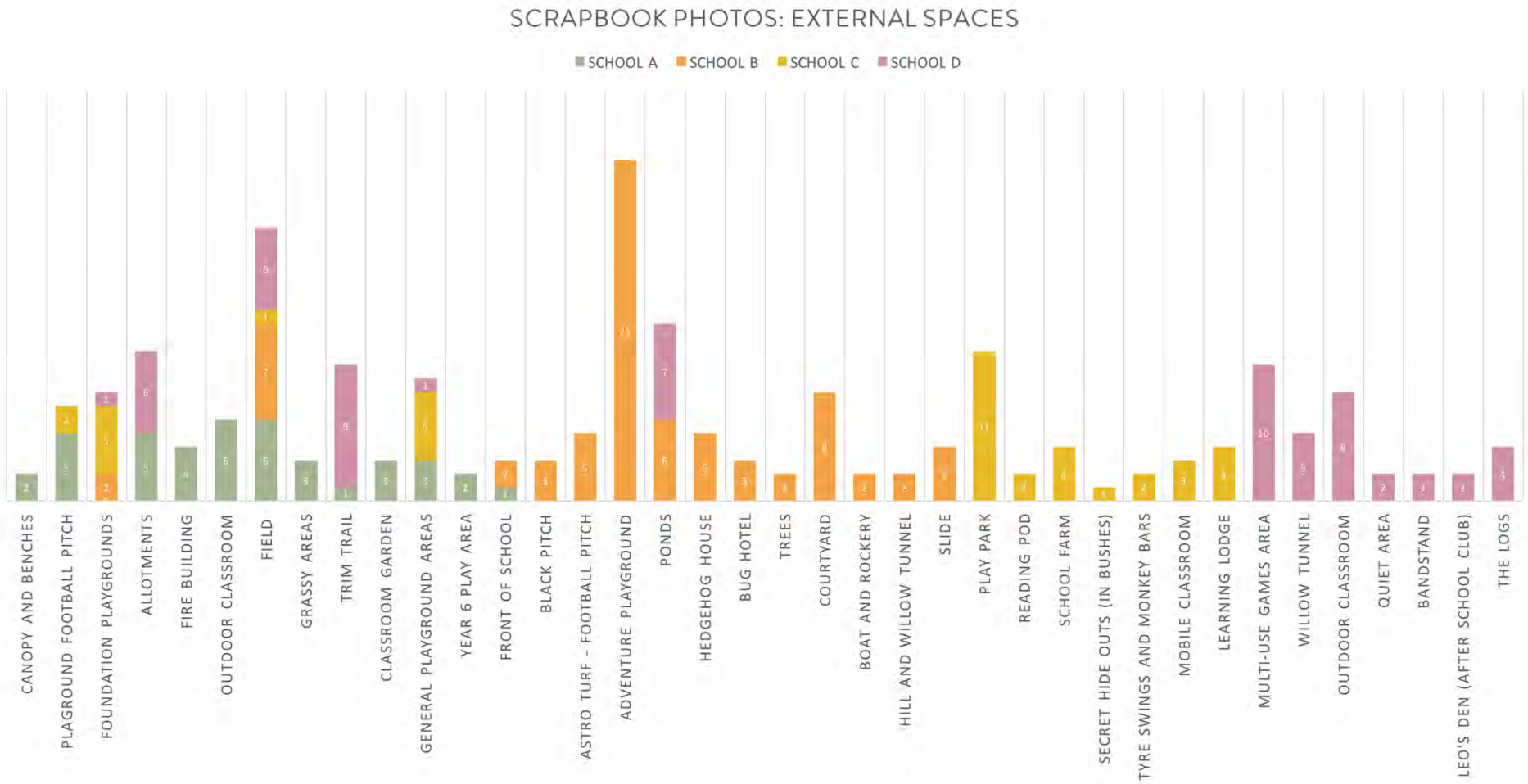
Spatial	External places and spaces	Internal spaces and places	Physical architectural elements
School D	MUGA (Multi-use games area) Trim Trail Pond Outdoor classroom Willow tunnel Field Logs Gardening area Band stand Leo's den School gates Quiet areas	Library Classrooms Hall Tuck shop Kitchen Children's kitchen Office First aid Meeting room Group area in corridor Cloakroom area in classroom	None

Items & People	Wall displays	Physical displays	Facilities & technology	Objects	Signage	People	Miscellaneous
School D	Artwork Work on display Achievement displays Drawing of old school PE scores Dinner staff list	Pots made in classroom	Whiteboard / Smartboards	Trophy cabinet Art cabinet Tuck menu Friendship stop First aid History piano	Teachers sign School rules sign Fire assembly point	Children playing	Name on scrapbook

Appendix D: Summary of photos selected for scrapbooks (internal spaces)



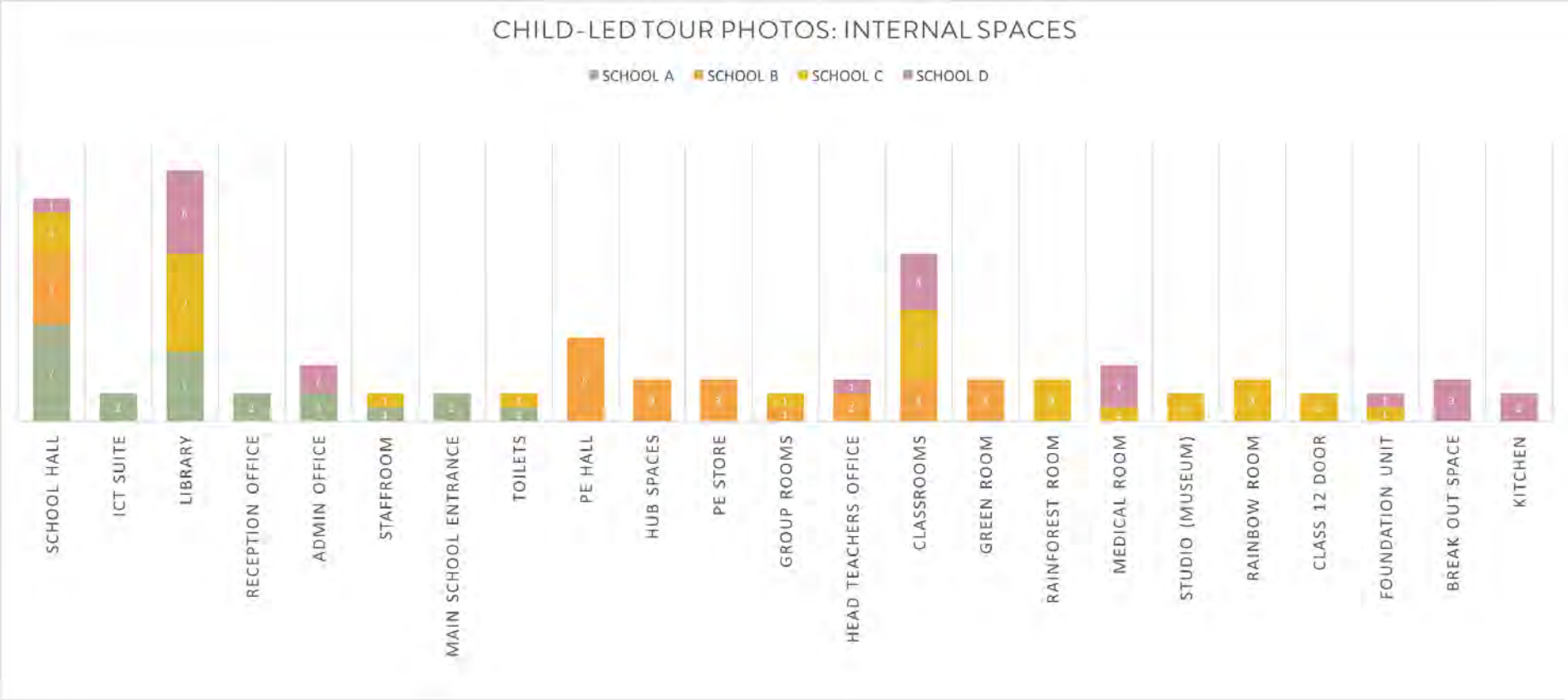
Appendix D: Summary of photos selected for scrapbooks (external spaces)



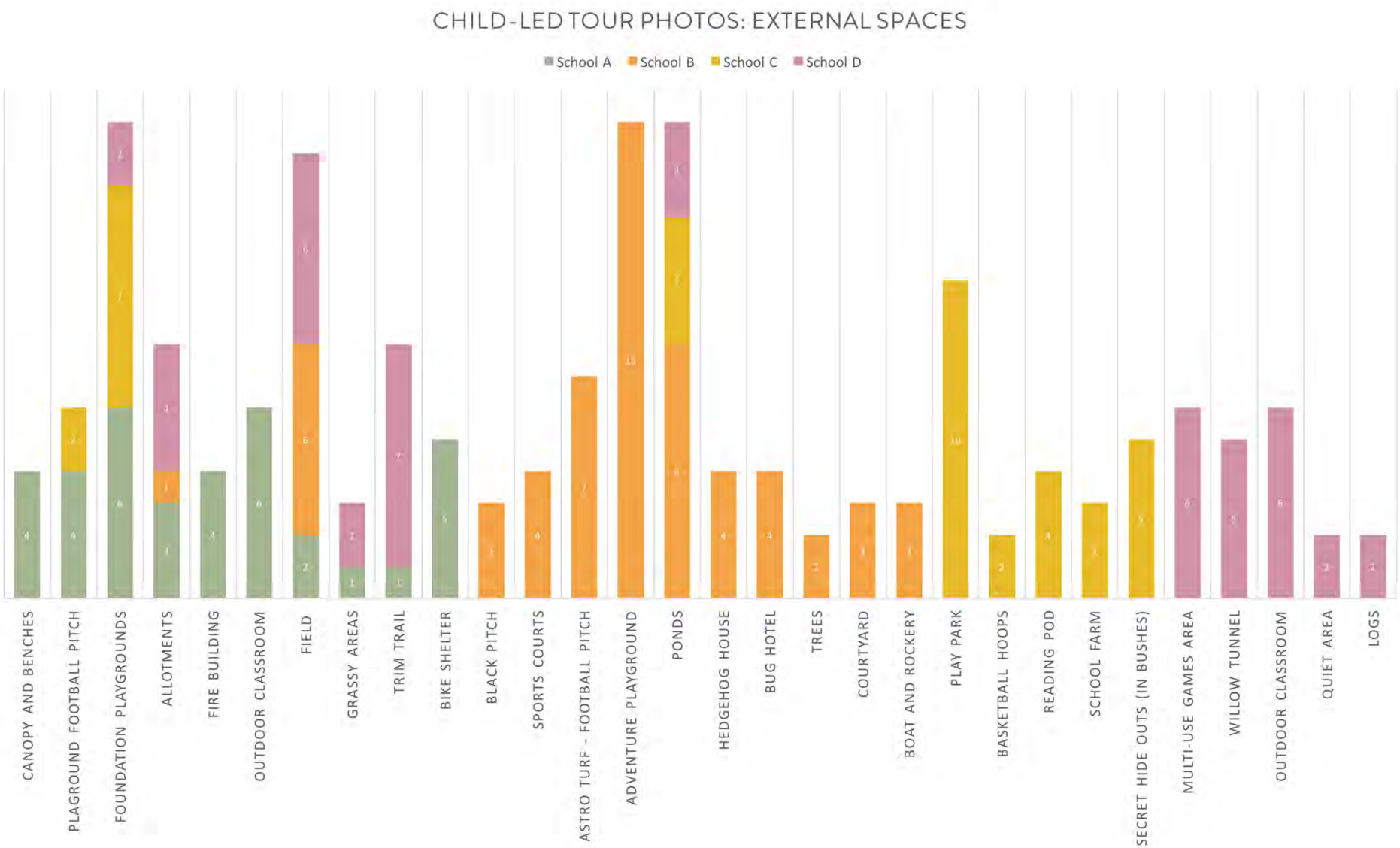
Appendix E

Child-led tours & photo rating survey

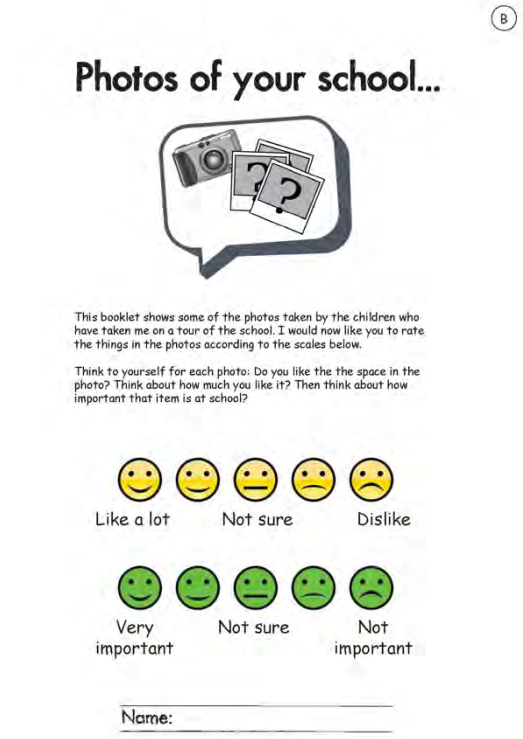
Appendix E: Summary of photos selected on child-led tours (internal spaces)



Appendix E: Summary of photos selected on child-led tours (external spaces)



Appendix E: Example pages from photo rating survey



B

Photos of your school...

This booklet shows some of the photos taken by the children who have taken me on a tour of the school. I would now like you to rate the things in the photos according to the scales below.

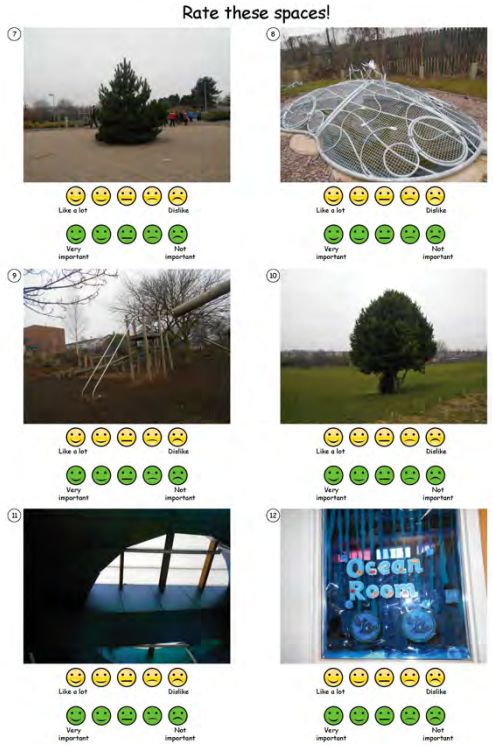
Think to yourself for each photo: Do you like the the space in the photo? Think about how much you like it? Then think about how important that item is at school?

Like a lot Not sure Dislike

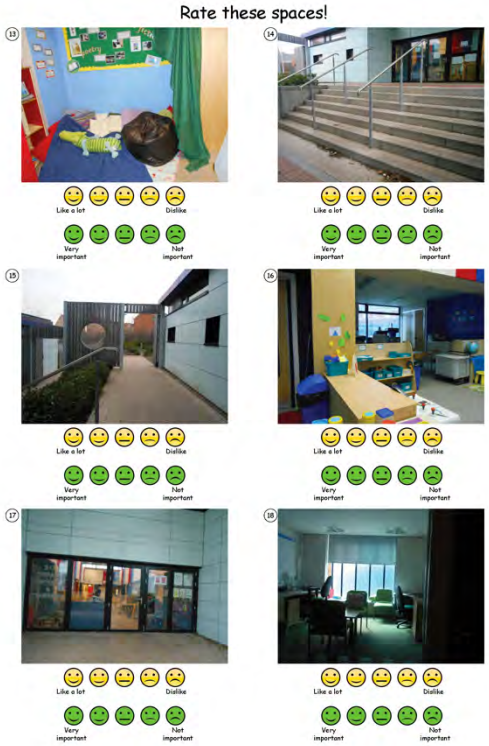
Very important Not sure Not important

Name: _____

Rate these spaces!



Rate these spaces!



Rate these spaces!

Appendix E: Example tabulation of photo rating survey

School A		Totals				
Photo 1		Like alot	Like	Not Sure	Dislike	Dislike alot
		10	2	1	0	0
		Very Important	Important	Not sure	A little important	Not important
		8	3	0	0	2
Photo 2		Like alot	Like	Not Sure	Dislike	Dislike alot
		4	1	2	2	2
		Very Important	Important	Not sure	A little important	Not important
		1	1	5	1	2
Photo 3		Like alot	Like	Not Sure	Dislike	Dislike alot
		4	3	3	0	3
		Very Important	Important	Not sure	A little important	Not important
		3	3	4	0	3
Photo 4		Like alot	Like	Not Sure	Dislike	Dislike alot
		13	0	0	0	0
		Very Important	Important	Not sure	A little important	Not important
		10	3	0	0	0
Photo 5		Like alot	Like	Not Sure	Dislike	Dislike alot
		9	3	1	0	0
		Very Important	Important	Not sure	A little important	Not important
		3	3	4	2	1
Photo 6		Like alot	Like	Not Sure	Dislike	Dislike alot
		13	0	0	0	0
		Very Important	Important	Not sure	A little important	Not important
		10	1	1	0	1
Photo 7		Like alot	Like	Not Sure	Dislike	Dislike alot
		7	4	0	1	0
		Very Important	Important	Not sure	A little important	Not important
		5	1	3	1	2
Photo 8		Like alot	Like	Not Sure	Dislike	Dislike alot
		6	1	1	1	3
		Very Important	Important	Not sure	A little important	Not important
		2	0	3	2	5
Photo 9		Like alot	Like	Not Sure	Dislike	Dislike alot
		10	1	0	0	0
		Very Important	Important	Not sure	A little important	Not important
		10	0	1	0	0
Photo 10		Like alot	Like	Not Sure	Dislike	Dislike alot
		10	1	1	0	0
		Very Important	Important	Not sure	A little important	Not important
		6	1	3	0	2

Appendix E: Photos Rating Survey Tables

School A

School A Photo Rating Survey: Liked and Important					
Liked AND important	Number liked	Number important	Liked ONLY	Number liked	Number important
External places			PE apparatus	12	5
Field	13	10	Wall graphics 5	11	6
Allotment	11	9	Meerkat display 2	11	6
Playground football pitch	10	8	Wall graphics 1	11	5
Bike shelter	12	7	Hub space 1	10	6
Playground (general)	10	7	Trim trail logs	10	6
Tyres for plants	9	7	Sweating tent	10	6
Internal places			Smartboard	10	6
School reception waiting area	12	11	Wall graphics 3	10	6
ICT Suite	13	10	Greek theatre display	10	6
Library 2	11	10	Classroom name	10	6
School hall 1	10	10	Butterflies in cage	10	5
School hall 3	10	9	Wall graphics 7	10	5
Admin office	10	9	Grassy area 1	10	4
Library 1	10	8	Wall graphics 2	10	4
School hall 2	11	7	Learning display	10	4
Entrance lobby	9	7	Display	10	4
Objects			Grassy area 2	9	6
Old school photos 1	12	12	Nursery classroom	9	6
Old school photos 2	12	12	Printer	9	6
School logo	12	11	Wall graphics 4	9	6
Staff photo display	12	10	Display	9	6
School name signage	13	9	Bags of gravel	9	5
TV screen (games)	12	9	Plants in pots	9	5
Computer in classroom	12	9	Top tigers display	9	5
Ceiling projector	11	9	Outdoor classroom	9	4
Recycle robots 4	10	9	Reception play park	9	4
Recycle robots 1	11	8	Attendance display	9	4
World map table top	11	8	Artwork in garden area	9	3
Map of the world	10	8	Hub space 2	8	6
Recycle robots 2	10	8	Staffroom	8	6
Whole school hand print display	10	8	Smartboard 2	8	6
Entrance sign	10	8	Nursery play equipment	8	6
Op Art display	8	8	Artwork	8	4
Meerkat display 1	12	7	Playground and canopy	8	2
Bookshelves in library	11	7	Porthole graphic in hall	8	2
Artwork display	10	7	Fire lighting area 1	7	5
Recycle robots 3	10	7	Foundation playground	7	5
Water cooler	10	7	Fire lighting area 2	7	4
			Classroom teachers and children	7	4
			Rubbish monster	7	4
			Wall graphics 6	7	4

School A Photo Rating Survey: Disliked / Not important			
Disliked ONLY	Number disliked	Not important	Number not important
Toilets	7	Pile of rocks	8

School B

School B Photo Rating Survey: Liked and Important					
Liked AND important	**Number liked**	**Number important**	**Liked ONLY**	**Number liked**	**Number important**
External places			Red ropes	10	4
Bug hotel	8	13	Drying artwork	9	6
Gardening area	4	12	Slide in adventure	9	5
Adventure playground 2	11	11	Adventure playground poles	9	5
Adventure playground 1	13	10	Basketball	8	5
Pond with metal cover	9	9	Coloured panels in hub	8	5
Yr 2/3 hub entrance	8	9	Florence Nightingale display	8	4
Front of school 2	4	9	Pine tree	8	3
Front of school 1	7	8	Hedgehog house	7	6
Tyres and slide	11	7	Sports field 2	7	5
Tyre swing in adventure	10	7	Tyre in adventure	7	4
Courtyard 1	9	7	Bouncy pads	7	3
Sports courts	9	7	Yr 6 sculptures	7	3
3G pitch - football pitch 2	8	7	Sports field 1	5	7
3G pitch - football pitch 1	6	7			
Courtyard 2	8	5			
Internal places					
Classroom 2	11	13			
PE store	11	12			
Library corner	10	12			
Sports hall 1	10	12			
Canteen hatch	10	12			
Head teacher's office	7	12			
Sports hall 2	12	11			
Classroom 1	11	11			
Green room	11	11			
Dining hall	9	11			
Yr 4 hub	9	10			
Dinner hall	8	10			
Ocean room	6	10			
Reading corner	9	9			
Yr 6 hub	8	9			
Time out room 1	7	9			
Time out room 2	5	9			
Foundation hub	6	8			
Hub area outside group room	9	7			
Objects					
Trophy cabinet 2	13	12			
Sound system controls	8	12			
Trophy cabinet 1	13	11			
Tuck trolley	11	10			
Handmade sign	7	10			
Fish tank in nursery	11	9			
PE kit in store	11	9			
Children's boxes	8	9			
Bike racks	7	9			
Framed art work	12	7			
Computers	11	7			
Sports achievements	11	7			
Revolving cupboards	9	7			
Florence Nightingale display	9	7			
Lunch menu	9	7			
Attendance display	9	7			
Frozen wall display	8	7			
Coloured panels in hall	7	7			
Behaviour display	7	7			

School B

School B Photo Rating Survey: Disliked / Not important			
Disliked	Number disliked	Not important	Number not important
Litter	10	Litter	10
Uncovered pond area	9	Uncovered pond area	9
Overflowing rubbish bin	9	Yellow tree in wild area	8
Muddy boat	7	Muddy boat	8
		Tree	8
		Yr 6 sculpture	8
		Springy pads	8
		Overflowing rubbish bin	7
		Courtyard	7
		Climbing wall	7
		Walkway	7

School C

School C Photo Rating Survey: Liked and Important					
Liked AND important	**Number liked (out of 12)**	**Number important (out of 12)**	**Liked ONLY**	**Number liked (out of 12)**	**Number important (out of 12)**
External places			School dinner hall	7	5
Learning lodge (new classroom)	9	11	Taiko drums	7	5
Play park 1	12	10	Flags in hall	7	5
Play park 2	10	10	World war display	7	5
Play park slide	12	8	Writing display	6	5
Play park bridge	10	8	Rainforest room	6	5
Reading pod 1	6	8	School farm	6	4
Reading pod 2	8	7	Foundation cars	6	4
Foundation playground 3	7	7	**Important ONLY**	**Number liked (out of 12)**	**Number important (out of 12)**
Rock in play park	10	7	Mobile classroom	5	9
Playground football pitch	8	7	Foundation unit	5	7
Reading pod 3	7	6	Social workers room	5	7
Foundation playground 1	5	6	Classroom	4	7
Foundation playground 2	7	6			
Pond	8	6			
Basketball nets	8	6			
Internal places					
Medical room	10	12			
Library 1	7	11			
Library 2	9	11			
Classroom 3	7	10			
School hall	9	9			
Classroom 1	4	8			
Classroom 2	6	8			
Small group room	8	8			
Museum in studio 1	8	8			
Gems classroom	7	7			
Museum in studio 2	8	7			
Rainbow room	5	7			
Foundation break out space	6	7			
Toilets	6	6			
Objects					
Bean bag in library	10	10			
Role of honour display	9	10			
Integrity award display	10	10			
Hanging bikes 2	7	9			
PGL holiday display	9	9			
School rules 3	9	9			
Attendance certificate	9	9			
Lunch menu	8	9			
Work on display	9	9			
School rules 2	7	8			
Basketball nets	11	7			
Flags in school hall	8	7			
Hanging bikes 3	7	7			
Reading super league	7	7			
Superbook	6	7			
Duck by pond	7	7			
Classroom sign	7	6			
Playground centre circle	6	6			
Hanging bikes 1	9	6			
School rules 1	6	6			
University display	6	6			
Olympic rings display	7	6			

School C

School C Photo Rating Survey: Disliked / Not important			
Disliked	Number disliked (out of 12)	Not important	Number not important (out of 12)
Cleaner's sink	11	Cleaner's sink	11
Bushes	8	Noughts and crosses toy	8
Museum sign	8	Bushes	7
Snakes and ladders in playground	6	Snakes and ladders in playground	7
Noughts and crosses toy	6	School plaque	7
Rainforest room	6	Rainforest room	6
Playground circle	6	Playground circle	6
Rainforest room	6	Taiko drum	6
Damaged rainbow picture on wal	6	Damaged rainbow picture on wall	6

School D

School D Photo Rating Survey: Liked and Important		
Liked AND important	**Number liked (out of 11)**	**Number important (out of 11)**
External places		
Foundation playground	8	10
Multi-use games area 3	10	9
Field 2	10	9
Pond area 2	9	9
Multi-use games area 1	9	9
Field 1	10	8
Goals on field	10	8
Pond area 1	9	8
Multi-use games area 2	9	8
Bike shelter	6	7
Outdoor classroom 1	9	6
Willow tunnel 2	8	6
Outdoor classroom	10	5
Willow tunnel 1	9	5
Internal places		
Classroom 1	10	11
First aid room 2	7	11
Hall	7	11
Library 1	8	10
Head teacher's office	8	10
Classroom 3	8	10
Classroom 2	6	10
Library 3	7	9
Canteen	7	9
Library 2	8	8
First aid room 1	6	8
Leos Den	6	6
Objects		
Whiteboard in classroom	7	9
Friendship stop	6	9
Smartboard	9	8
Staff photo display 1	6	8
Partner school display	9	7
Reach for the stars display	8	7
Framed artwork 1	8	6
Who is god display	8	6

Important	Number liked (out of 11)	Number important (out of 11)
First aid cupboard	5	10
School rules	2	10
Entrance gates	1	10
Horse shoe learning space	4	9
Admin office	4	9
Staff photo display 2	5	8
Sinks in corridor	2	8
School welcome sign	5	7
Gardening area 2	4	7
Classroom door	3	7
Gardening area 2	5	6

Liked ONLY	Number liked (out of 11)	Number important (out of 11)
Trim trail	11	3
Bridge on trim trail	11	2
Framed artwork 2	9	5
Quiet area	9	4
Pots on display in	9	3
Totem sculpture	9	3
Swings in trim trail	9	1
Old quiet area 1	8	5
Owl display	8	5
Framed artwork 3	8	5
Fire assembly point	8	3
Table display in classroom	8	3
Fractions display in corridor	7	5
History piano	7	5
Celtic display in corridor	7	4
Classroom window	6	5
Gardening area 1	6	4
Old quiet area 2	6	4
Light display in corridor	6	4
Space outside classroom 1	6	3
Space outside classroom 2	6	3
Kitchen for lessons	5	6
Kitchen	5	6
Gate to MUGA	5	6
Admin office	5	6
Kitchen	5	6
Logs	5	6
Pond	5	6
Library 2	4	6

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Appendix F

Ethical approval information

Appendix F: Letter to school about the research

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Faculty of Engineering
Department of Architecture & Built Environment
University of Nottingham
University Park
Nottingham NG7 2RD
United Kingdom

Tel:
Email:

Dear Sir/Madam,

I am in the second year of studying for a PhD at the University of Nottingham, for which I am investigating young children's school/learning environments and in particular, the impact elements of this environment may have on their experiences at school which may ultimately impact on their learning and development.

Having studied Architecture at The University of Nottingham, I am a qualified Architect and have five years work experience in practice. I have always had an interest in how buildings and spaces impact on their users and the environment, which has led me to undertaking doctoral research in this area. I am recruiting case study schools in which to undertake a series of phased studies; conducting observation and participatory workshops, involving both children and staff members. There will be three phases to the research, Phase 1 being an Observational Study and the later phases will include participatory sessions which may include child-led tours, focus groups, interviews and/or creative workshops. The aim of these studies is to understand how users of schools perceive their environments and giving them a 'voice' within the research.

The research will be based in schools in the Nottinghamshire area, looking at different school types and settings. The research will aim to understand key aspects of the school environment that matter to young children, whilst it may also reveal interesting parallels between the design and/or construction of a building and the impact certain factors have on young children and their education. I am interested in looking at the following: methods of teaching in a classroom space, how children generally interact with spaces, the number of classrooms, general spatial layout within the building including circulation space, outdoor space as well as any other communal indoor areas.

As a consequence I am writing to you to ask if you would be willing to assist me in my research and allow me to conduct my research at your school, beginning with Phase 1 which will be an Observational Study. Following this, there would be two participatory phases to the research, which I will provide more information on closer to the time. There is a detailed information sheet which explains Phase 1 of the research enclosed with this letter along with a consent form for the school to be signed by the Head Teacher. I also hold an Enhanced DBS Certificate, which can be presented as necessary.

If you would like further information please do not hesitate to contact myself or my supervisor Professor Tim Heath (see below). I would be happy to discuss further over the telephone or in person.

I look forward to hearing from you.

Yours faithfully,

Lois Woods
PhD Researcher
Architect & Design Studio Tutor
University of Nottingham
[redacted]
lois.woods@nottingham.ac.uk

Professor Tim Heath
Main Supervisor BA, BArch, MA, PhD, ARB, RIBA
Chair of Architecture & Urban Design
Department of Architecture & Built Environment
Faculty of Engineering
Paton House
University of Nottingham
Nottingham NG7 2RD
tim.heath@nottingham.ac.uk

Appendix F: Example of general information sheet

GENERAL INFORMATION SHEET:
SCHOOL ENVIRONMENTS RESEARCH STUDY

This information sheet explains what the study entails and how you/your child may be affected by it.

Who is the researcher?

Mrs Lois Woods BArch Dip Arch MArch ARB
PhD Researcher, University of Nottingham
Department of Architecture and the Built Environment
Research funded through the Children and Childhood Network by EPSRC.

Summary of the Research

I am in the second year of studying for a PhD at the University of Nottingham; this doctoral research will be investigating young children's school environments and in particular, how children perceive their environment and the impact that elements of this environment may have on their place experiences at school.

Nature and purpose of the study?

Your school have been asked to take part in the research study by The University of Nottingham in order to aid the PhD investigation into primary school buildings. The phases of this research study are planned as follows:

Phase 2: Focus groups and child-led tours (to be conducted February-March 2015)
Phase 3: Child-led tours and focus groups (to be conducted May-July 2015)

Phase 2 and 3 of the research study will entail participatory studies with a group of children in order to begin to understand their views and experiences of their school building and their school grounds.

How might the research activities affect me/my child?

The children will be taking the researcher on child-led tours of the building and will be given digital cameras to photograph places they like and dislike around the school. Photos taken by the children may include other children or members of staff as they photograph different places within the school building and grounds.

Potential Inconvenience?

The researcher will be wandering around school at various times during the research periods. There is potential that children could become distracted at school by the researcher's presence and by children carrying out the child-led tours if they choose to enter classrooms. All children will be pre-warned of the researcher's presence in school by teaching staff in order to limit distraction where possible. The child-led tours and focus groups will take place outside of the classroom so would hopefully minimise inconvenience for the rest of the children and staff members.

Confidentiality and anonymity?

All notes taken for the duration of the study will remain anonymous. There will be no notes taken which relate to names or personal descriptions of children and adults that could let the persons in question become identifiable. No reference will be made to personal details and no photos that may include a member of staff or child will be linked to any notes taken. It will therefore, not be possible to identify any individuals from this information. The recorded information will not be accessed or used by anyone else apart from the researcher in her own work. All photos and notes taken will be kept and used in line with University of Nottingham Code of Research Conduct and Research Ethics.

It may be the case that a child takes a photograph of another child or member of staff and could therefore feature in the visual data. There is an "opt out" consent form if anyone wishes to opt out of the research in this instance. This form must be returned to school and anyone wishing to be removed from photos will be made known to the researcher. Any photo that may contain this person/child will be disposed of and not used in the research

Photos may be used for future publications and/or in the final thesis. In this instance, if any people appear in any photos, their faces would be blurred and as well as obscuring any other identifying features along with the complete removal of non-consented members.

How will data be used?

The data will undergo data analysis as part of the wider research study and will be analysed in order to identify themes and trends. The information will also be used as part of the comparative study with other case study schools. Photos taken will be used for reference by the researcher during the research period. This may be used in future for publications, presented at conferences and will be used in the final PhD thesis and photos may be used for illustration purposes.

What will happen to data after the study?

After the research is complete, data will be retained for a minimum of 7 years after the date of any research that is published, in accordance with The University of Nottingham Code of Research Conduct and Research Ethics.

Who to contact if you have any questions?

If you have any questions about the study at all, please contact myself (Lois Woods) or my supervisor (Tim Heath) on the contact details below.

Lois Woods
PhD Researcher
Architect & Design Studio Tutor
University of Nottingham
Nottingham NG7 2RD
[redacted]

Professor Tim Heath (Main Supervisor)
BA, BArch, MA, PhD, ARB, RIBA
Chair of Architecture & Urban Design
Department of Architecture & Built Environment
Faculty of Engineering
Paton House
University of Nottingham
Nottingham NG7 2RD
[redacted]

Who to contact if you have a complaint?

Contact the Engineering Research Ethics Coordinator at The University of Nottingham:

Email: ez-eng-ethics@nottingham.ac.uk

NOTE:
All participants' involvement is voluntary and participants are free to withdraw at any time.
Any data already collected from an individual who may choose to withdraw from the study will no longer be used within the research will be appropriately destroyed.

Appendix F: Child-led tour information and consent form

Tour of your school – Information

My name is Lois Woods, I am a researcher at The University of Nottingham and I am doing a project looking at your school.

I would really like you to give me a tour of your school building and to hear what you think about it.

You can take photos as we walk round the building of places you like and dislike.

You can ask for the tour to stop at any time. It will take about forty five minutes to an hour.

The tour and our conversations we have would be private. I will not tell your teachers or your family what you say, unless it is really important for me to.

The tour will be recorded as we walk around the school with a video recorder and written notes will be made.

You can say yes or no. It is up to you whether you take part.

If you are happy to take me on a tour of your school, I would be very grateful if you could circle "yes" and sign the form on the following page.

If you would like to know more about the project, please ask either me or ask your head teacher to contact me later.

Thank you for taking the time to read this information sheet and for your help in my project.

Tour of your school – Do you want to take part?

If I take Lois Woods on a tour of my school and tell her about it:

- I understand that the tour will be video recorded.
- I understand that anything I say or photos I take will be private but may be used in Lois' project work.
- I understand that I can stop the tour at any time.

If you understand the statements above, you now need to decide whether you would like to take part in the project.

Please put a circle round No or Yes.

No

Yes

Your name.....

Age .....

Year .....

Appendix F: Focus groups information and consent form

Group drawing activity – Information

My name is Lois Woods, I am a researcher at The University of Nottingham and I am doing a project looking at your school.

I would really like you to take part in a group drawing activity and to hear what you think about your school.

You can ask to leave the activity at any time. It will take about forty five minutes to an hour.

Your drawings and our conversations we have would be private. I will not tell your teachers or your family what you say unless it is really important for me to.

The group activity will be recorded with a sound recorder and I will also be taking notes.

You can say yes or no. It is up to you whether you take part.

If you are happy to tell me about your school and take part in the drawing activity, I would be very grateful if you could circle "yes" and sign the form on the following page.

If you would like to know more about the project, please ask either me or ask your head teacher to contact me later.

Thank you for taking the time to read this information sheet and for your help in my project.

Group drawing activity - Do you want to take part?

If I take part in the group drawing activity and tell Lois about my school:

- I understand that the activity will be recorded.
- I understand that anything I say or drawings I make will be private but may be used for Lois' project work.
- I understand that I can ask to leave the activity at any time.

If you understand the statements above, you now need to decide whether you would like to take part in the project.

Please put a circle round No or Yes.

No

Yes

Your name.....

Age .....

Year .....

Appendix F: Scrapbooks information and consent form

School Environment Scrap Book

This scrap book is part of the research project on your school. It would be good if you could fill this in before we meet again next term.

Each page has a question or topic for you to think about which is to do with your time at school and the places around school which you use at different times.

You can complete the scrap book by doing drawings, writing down your thoughts or sticking things in it.

We will also look at any of the photos you take around the school next term, and you can also add these to your scrap book when we meet again.

Do you want to do the scrap book?

You can say yes or no. It is up to you whether you fill out the scrap book.

If I complete the scrap book:

- I understand that the scrap book will be looked at by Lois and may be used for her project work.
- I understand that I can stop doing the scrap book at any time.

If you understand the statements above, you now need to decide whether you would like to take part and fill out the scrap book.

Please put a circle round No or Yes.

No

Yes

Your name.....

Age .....

Year .....

Signature

Thank you for taking the time to read this information sheet and for your help in my project.

Appendix F: Head-teacher consent form

PARTICIPANT CONSENT FORM: HEAD TEACHER

Project title: Investigating children's place experiences in primary schools
Researcher's name: Lois Woods
Supervisor's name: Professor Timothy Heath

- I have read the Information Sheet and the nature and purpose of the Phase 2 and 3 research visits to the school has been explained to me. I understand the purpose of the research study and the school's involvement in it.
- I understand that there will be a "scrap book" exercise to be given to some of the children which will require some children's participation. I agree for the school to take part in this.
- I understand that there will be child-led tours with photography, interviews and creative focus groups which will require some of the children's participation. I understand that these sessions will either be audio or video recorded. I agree for the school to take part in this.
- I understand that myself, any member of staff or child may withdraw from the research project at any stage and that this will not affect their status now or in the future.
- I understand that while information gained during the study may be published; I or any members of staff and children will not be identified and that all personal comments will remain confidential.
- I understand that data will be stored as digital photos, recordings and hard and electronic copies of the notes in a secure location with only the researcher having access to the information.
- I understand that I may contact the researcher or supervisor if I require further information about the research, and that I may contact the Research Ethics Coordinator of the School of Engineering, University of Nottingham, if I wish to make a complaint relating to my involvement in the research.

Signed ……
(Head Teacher)

Print name …… **Date** ……

School ……

Contact details
Researcher: *Lois Woods, lois.woods@nottingham.ac.uk*
Supervisor: *Timothy Heath, tim.heath@nottingham.ac.uk*
Ethics Coordinator: *ez-eng-ethics@nottingham.ac.uk*

Appendix F: Parents' opt-out consent form

OPT-OUT CONSENT FORM: PARENTS AND GUARDIANS

Project title: Investigating children's place experiences in primary schools
Researcher's name: Lois Woods
Supervisor's name: Professor Timothy Heath

*Please put a cross in the box against the statements that apply to you. ie. Only mark a cross next to the activities that you wish to **exclude** your child from*

☐ I **do not** wish for my child to participate in a child-led tour of the building.

☐ I **do not** wish for my child to participate in the creative group activities and discussion.

☐ I **do not** wish for any photograph taken by other children that might include my child to be used in the research.

- I have read the Information Sheet and the nature and purpose of the research visits to the school has been understood.
- I understand that as I have opted-out on behalf of my child/children no data will be collected from my child/children.
- I understand that I may contact the researcher or supervisor if I require further information about the research, and that I may contact the Research Ethics Coordinator of the School of Engineering, University of Nottingham, if I wish to make a complaint relating to my child's involvement in the research.

Signed ……
(Parent/Guardian)

Print name …… **Date** ……

PLEASE RETURN THIS FORM AS SOON AS POSSIBLE TO THE SCHOOL.

Contact details
Researcher: *Lois Woods lois.woods@nottingham.ac.uk*
Supervisor: *Timothy Heath tim.heath@nottingham.ac.uk*
Ethics Coordinator: *ez-eng-ethics@nottingham.ac.uk*

Appendix G

Drawings of the schools

Appendix G: School A drawings

School A Site Plan

Adapted from original. Source: Nottinghamshire County Council

Appendix G: School A drawings

School A Plan

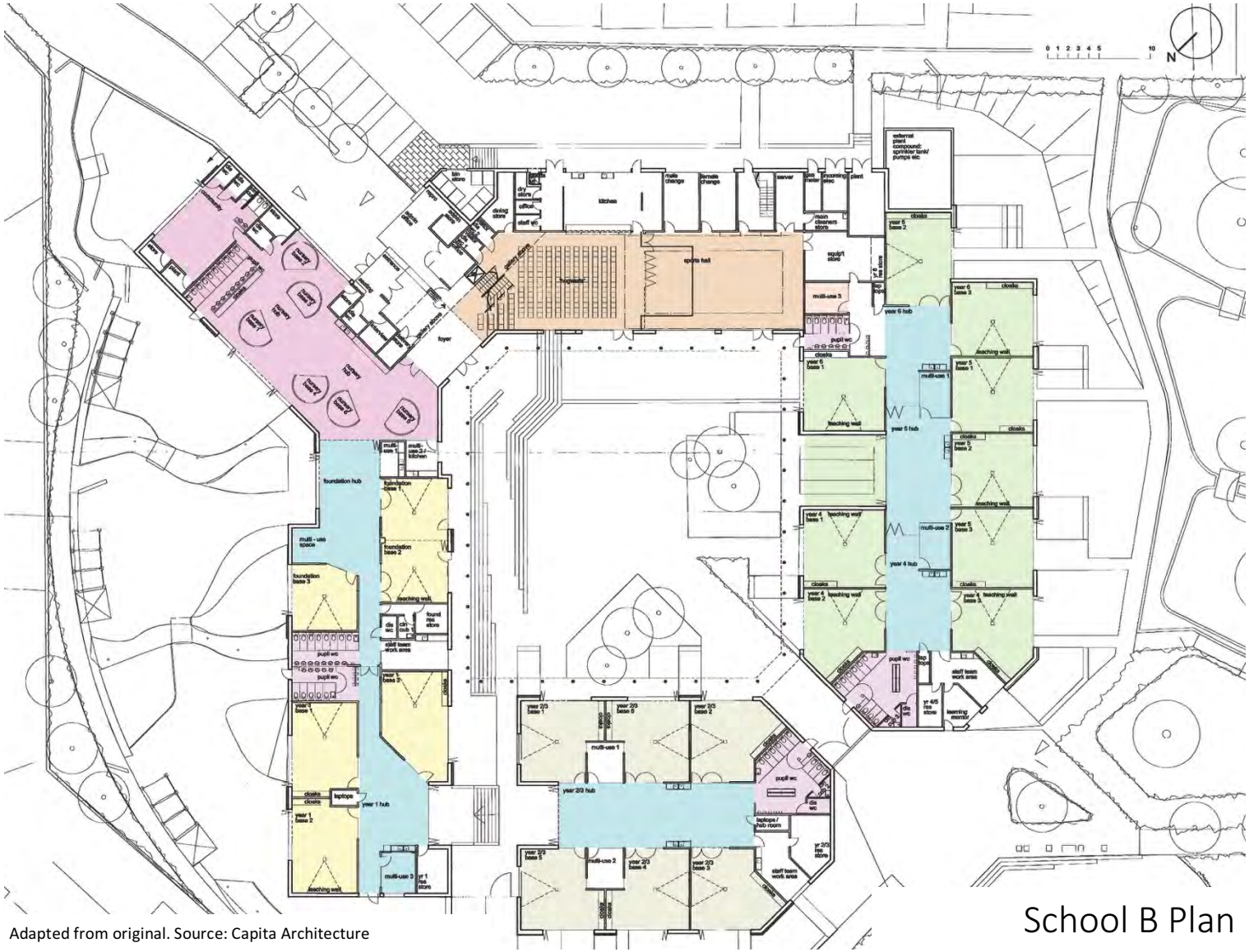
Adapted from original. Source: Nottinghamshire County Council

Appendix G: School B drawings

Adapted from original. Source: Planit Intelligent Environments

School B Site Plan

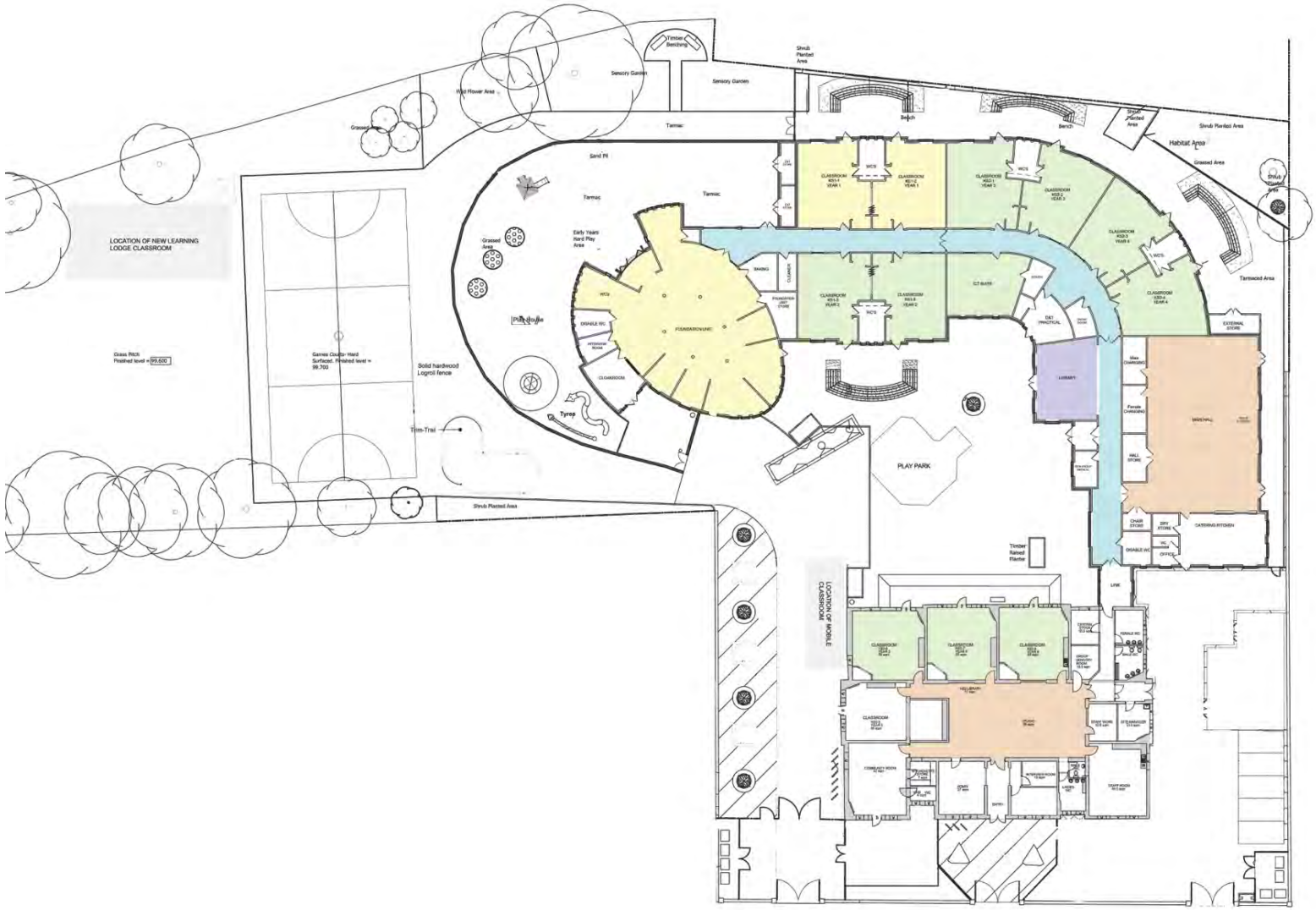
Appendix G: School B drawings



School B Plan

Adapted from original. Source: Capita Architecture

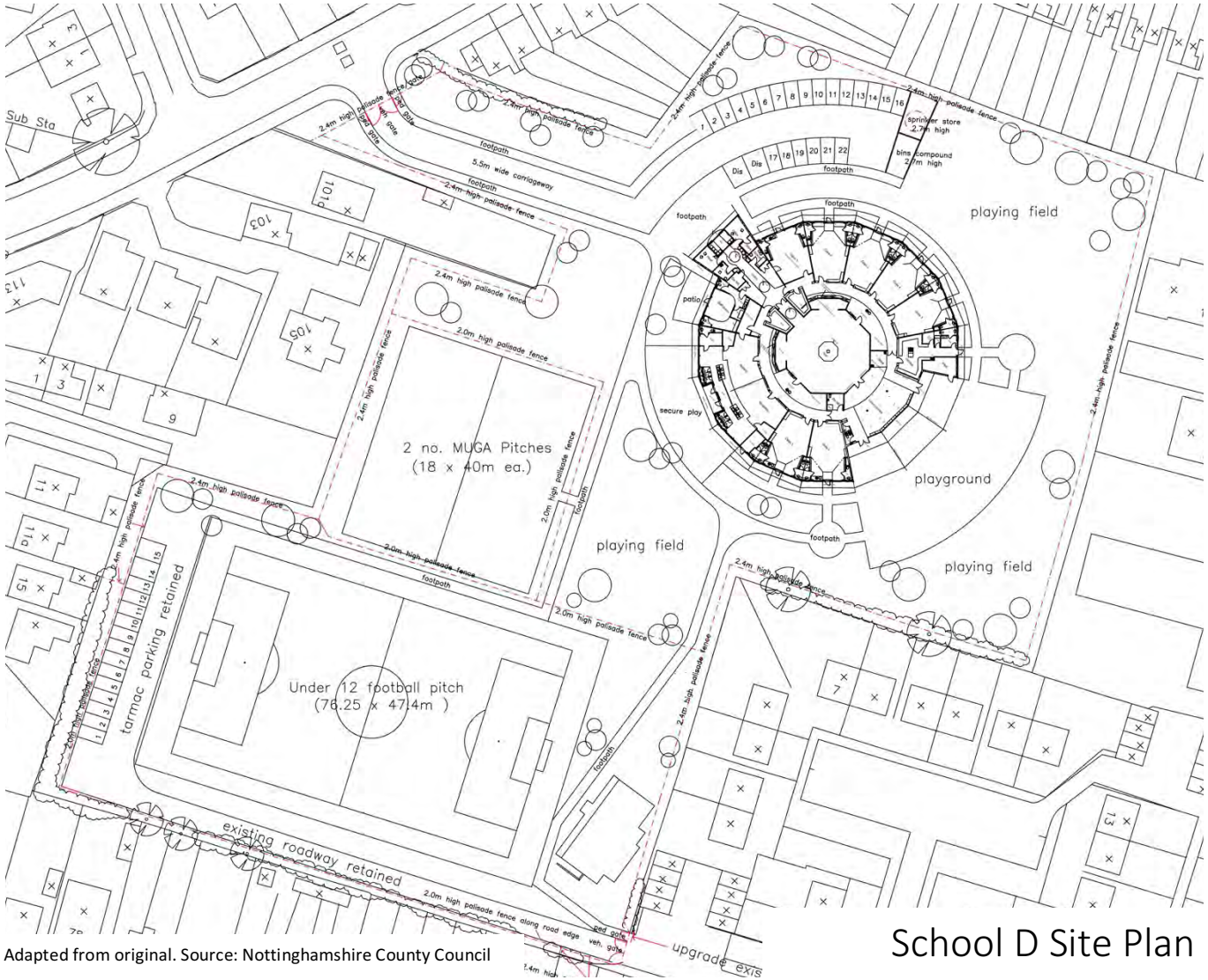
Appendix G: School C drawing



School C Site Plan

Adapted from original. Source: Nottinghamshire County Council

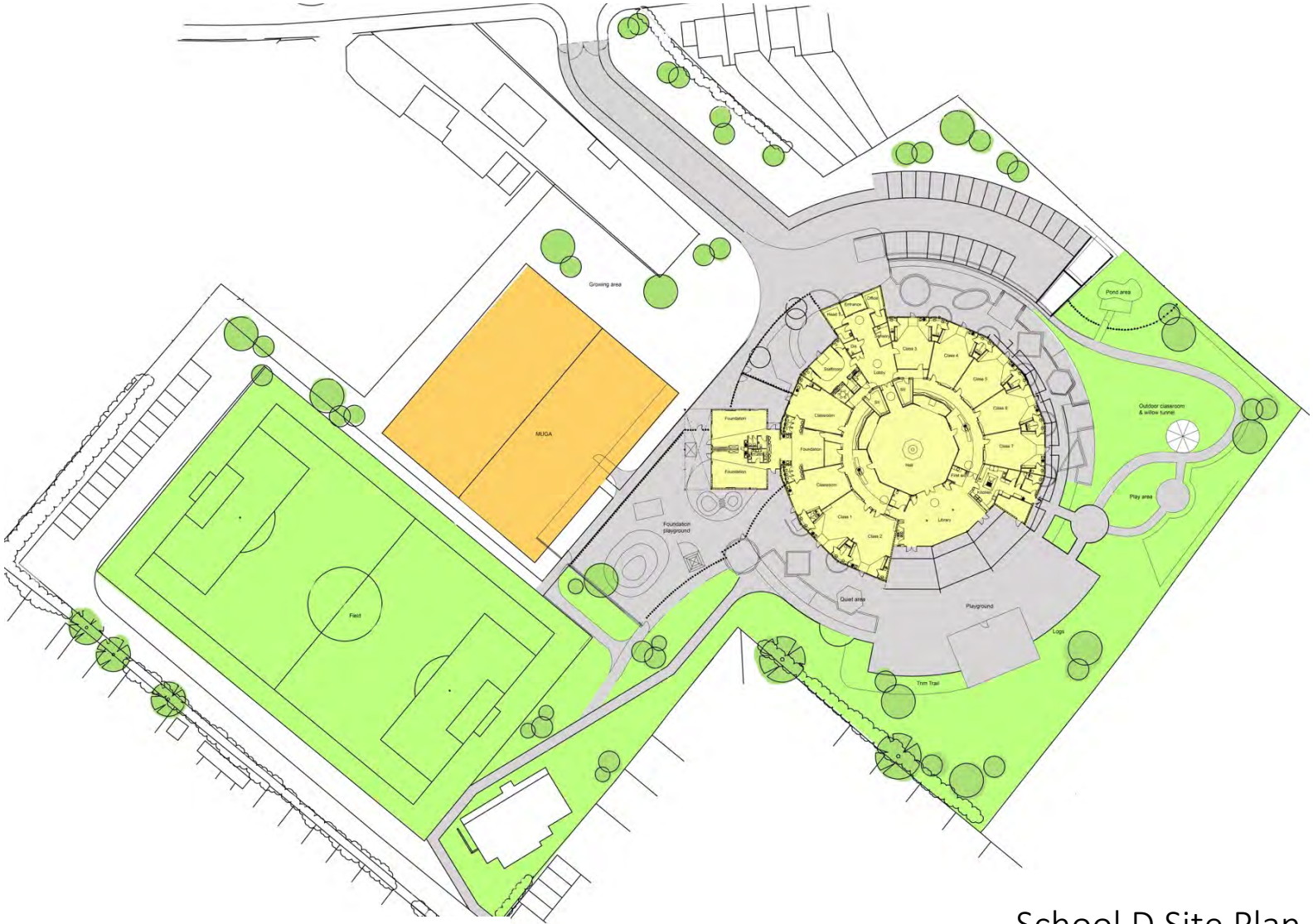
Appendix G: School D drawings



Adapted from original. Source: Nottinghamshire County Council

School D Site Plan

Appendix G: School D drawings



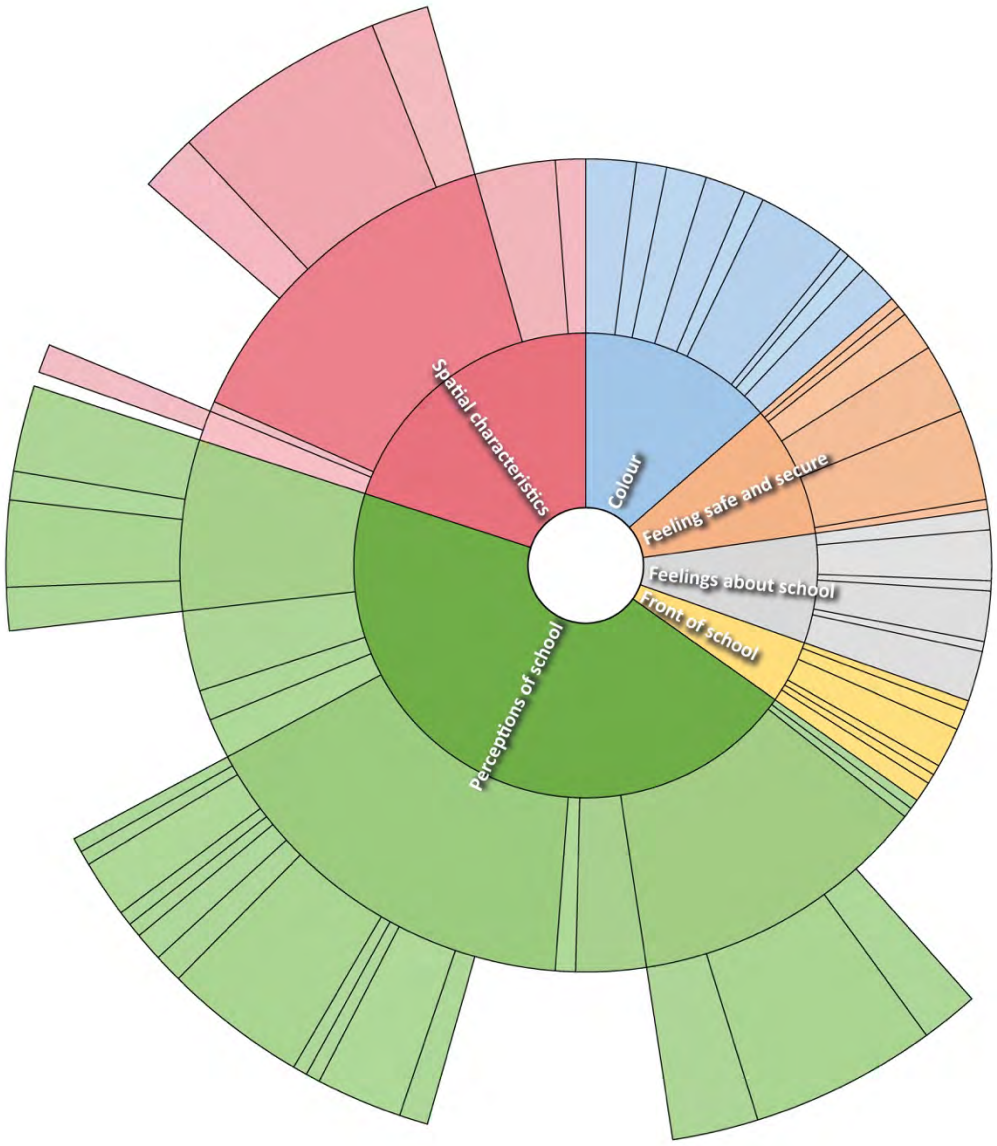
School D Site Plan

Adapted from original. Source: Nottinghamshire County Council

Appendix H

Coding diagrams

Appendix H: Chapter 7 coding diagram

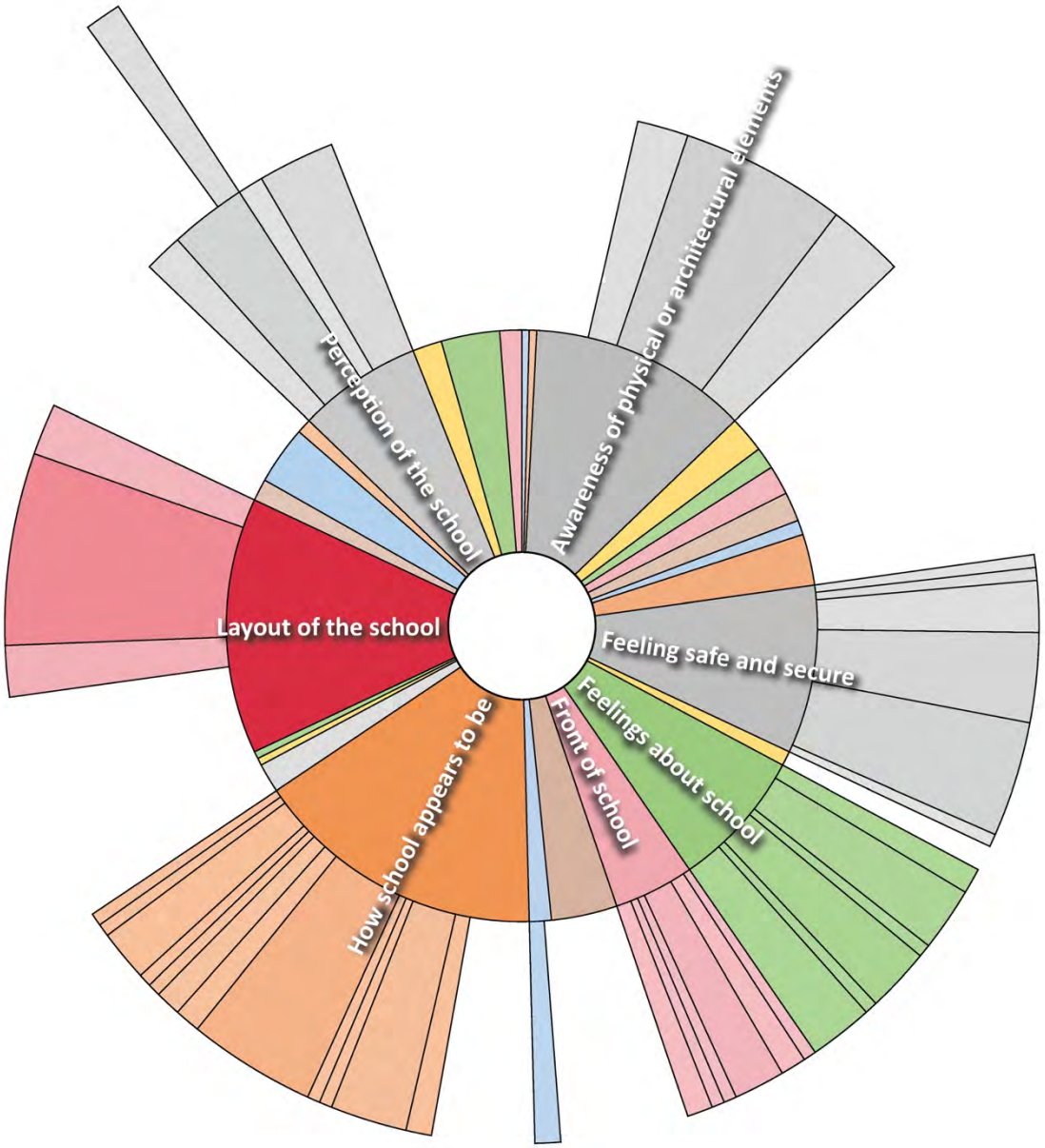


Top level codes relating to perceptions about school

NVivo Sunburst Diagram: Radial coding chart indicating hierarchical levels of the coding data

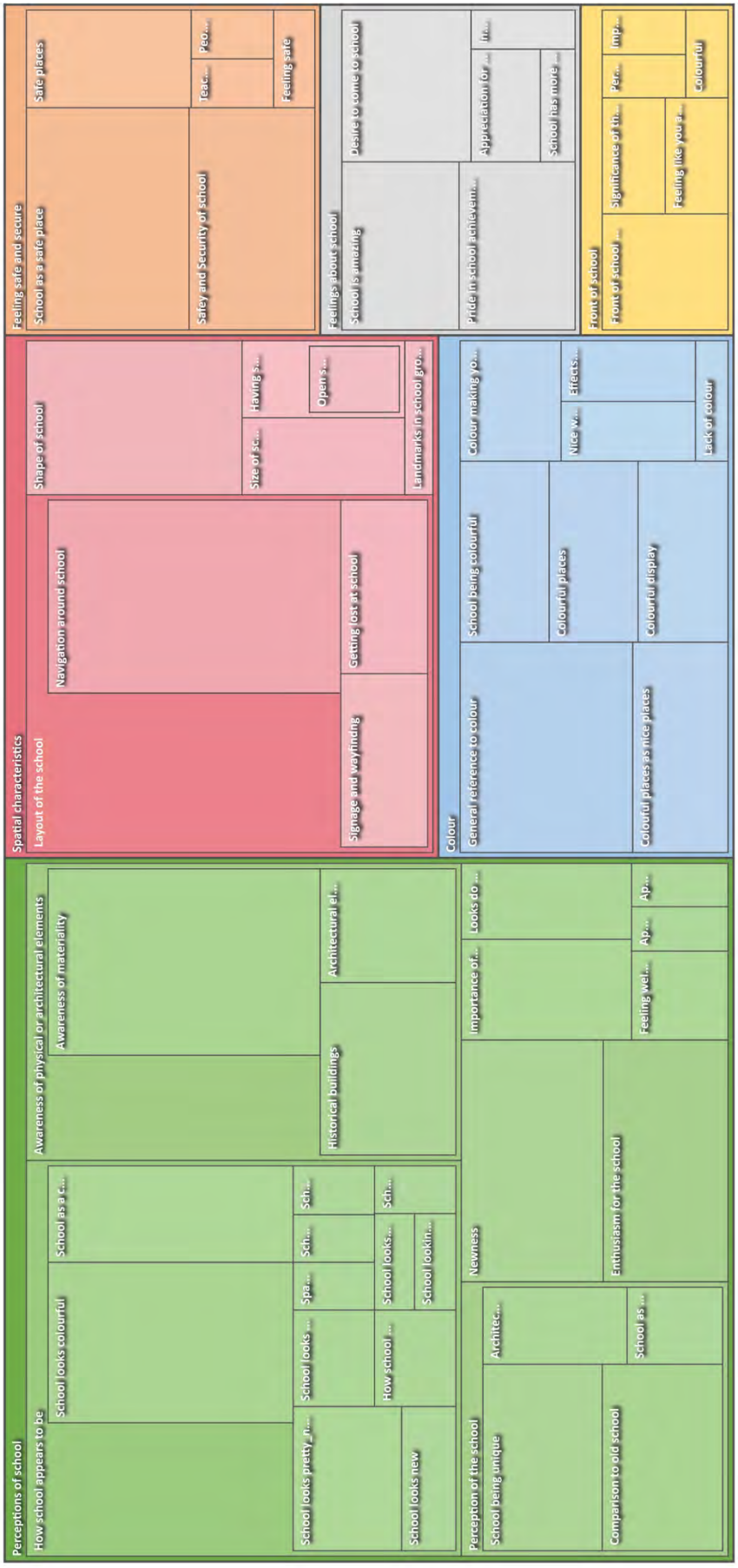
- Innermost rings are the top level of the hierarchy (or major codes)
- Segments represent the sub-codes
- Size by items coded: Size of segments represent the amount of coding at each 'node'
- Colour by hierarchy: Variation in colour represents the hierarchy of the coding references

Appendix H: Chapter 7 coding diagram



Secondary codes relating to perceptions about school

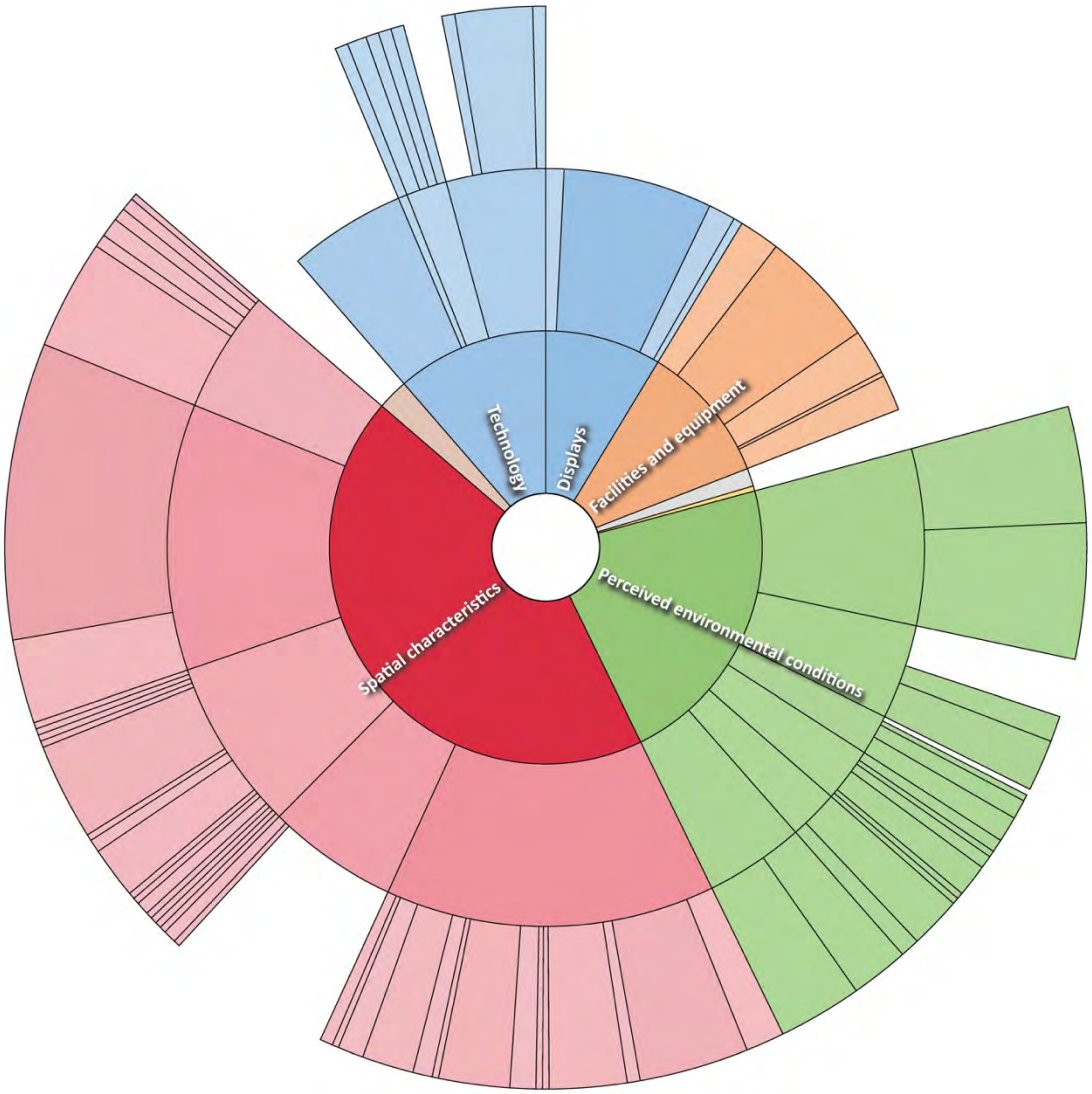
Appendix H: Chapter 7 coding diagram



NVivo Tree Map Diagram: A coding chart indicating hierarchical coding data as nested rectangles

- Size by items coded: Size of rectangles represent the amount of coding at each 'node'
- Colour by hierarchy: Variation in colour represents the hierarchy of the coding references

Appendix H: Chapter 8 coding diagram

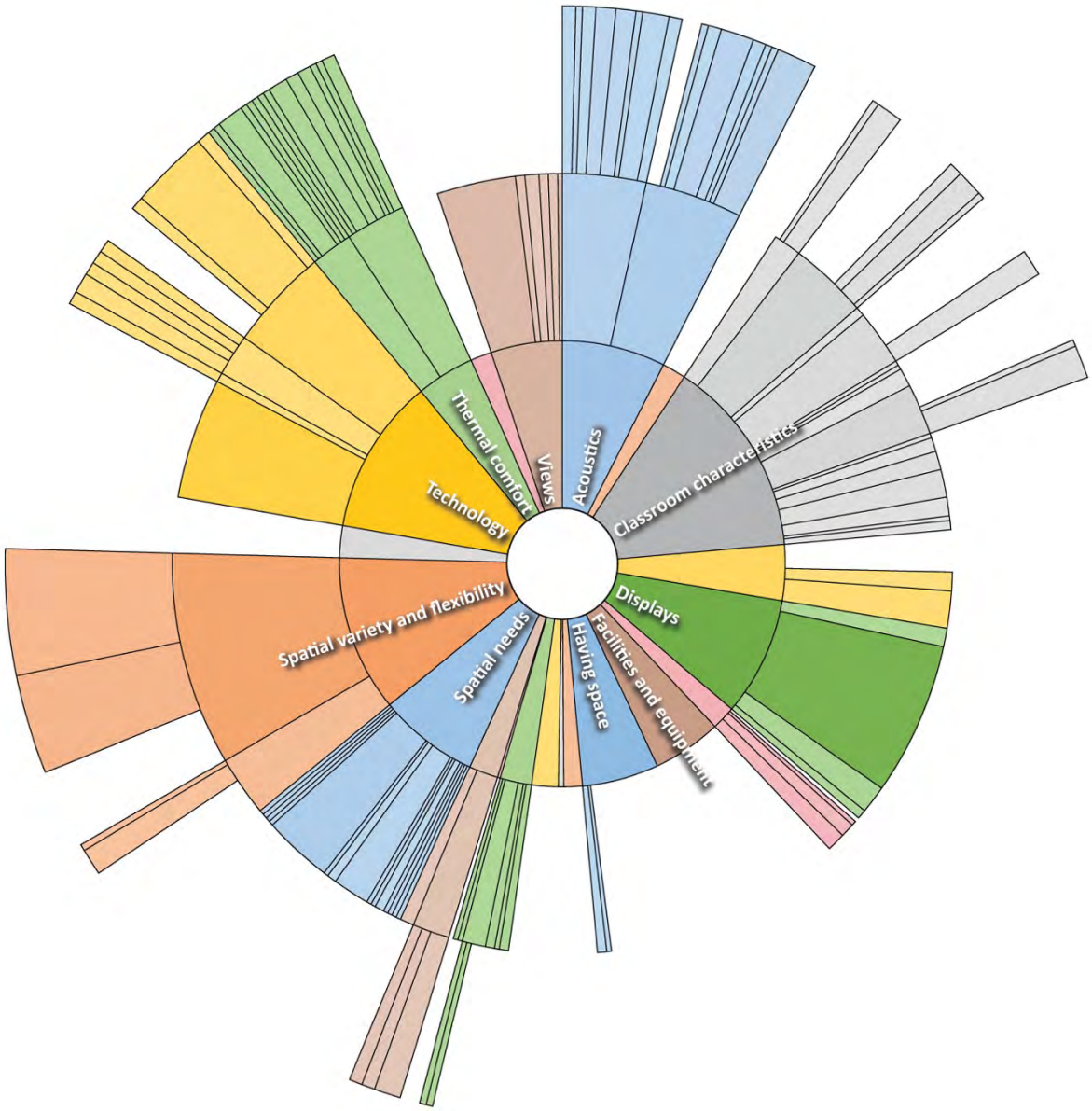


Top level codes relating to desirable characteristics at school

NVivo Sunburst Diagram: Radial coding chart indicating hierarchical levels of the coding data

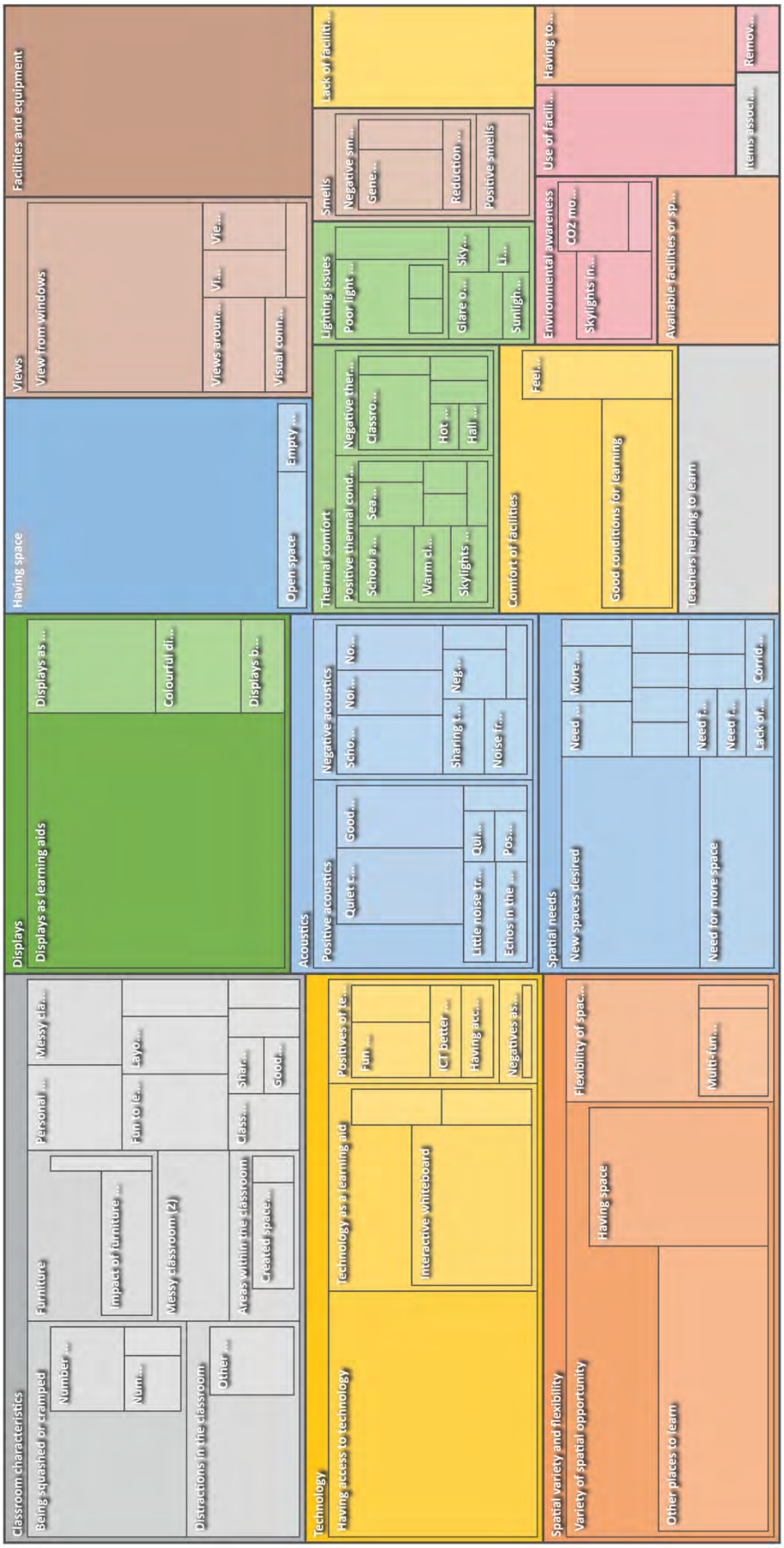
- Innermost rings are the top level of the hierarchy (or major codes)
- Segments represent the sub-codes
- Size by items coded: Size of segments represent the amount of coding at each 'node'
- Colour by hierarchy: Variation in colour represents the hierarchy of the coding references

Appendix H: Chapter 8 coding diagram



Secondary codes relating to desirable characteristics at school

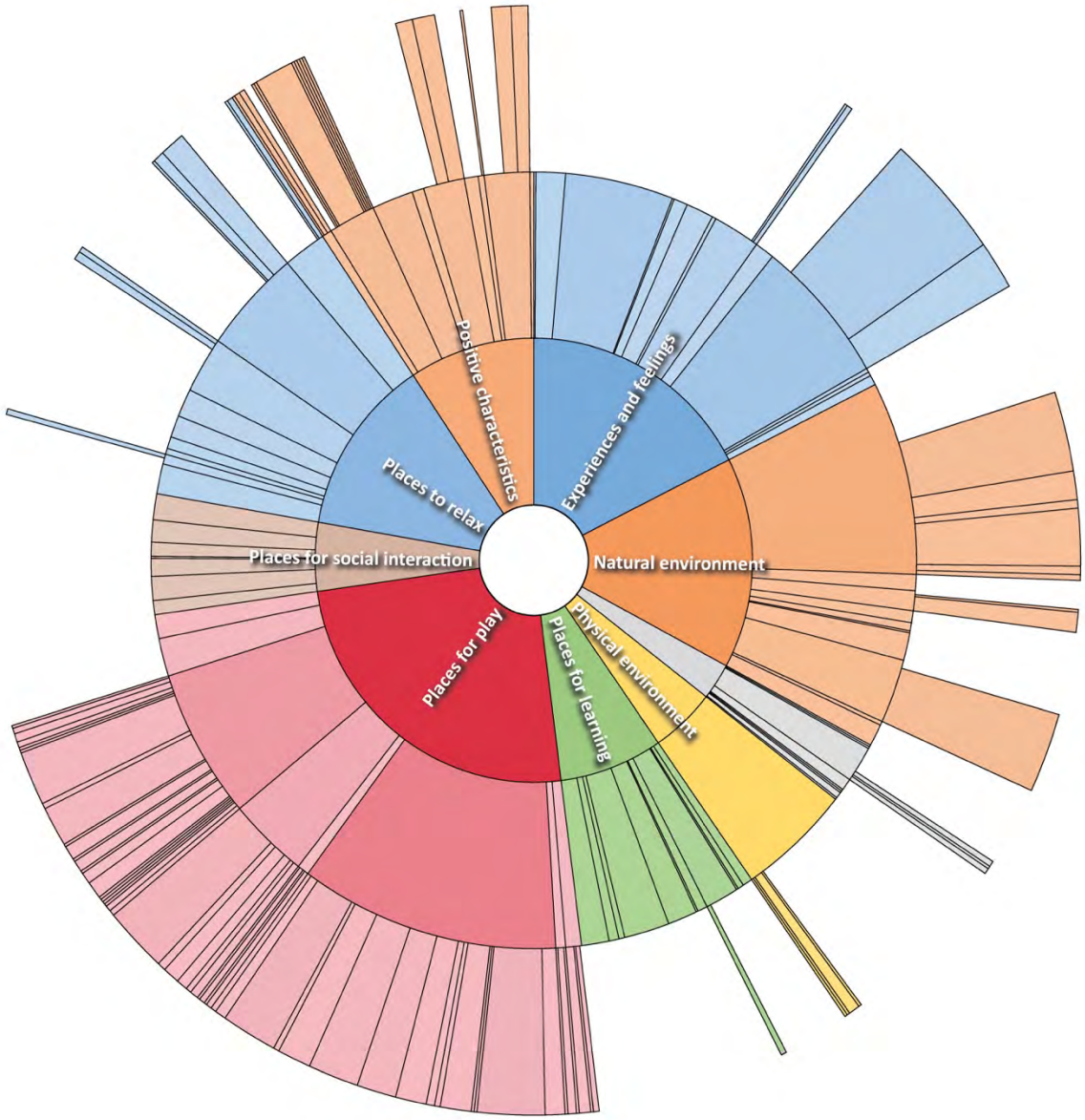
Appendix H: Chapter 8 coding diagram



NVivo Tree Map Diagram: A coding chart indicating hierarchical coding data as nested rectangles

- Size by items coded: Size of rectangles represent the amount of coding at each 'node'
- Colour by hierarchy: Variation in colour represents the hierarchy of the coding references

Appendix H: Chapter 9 coding diagram

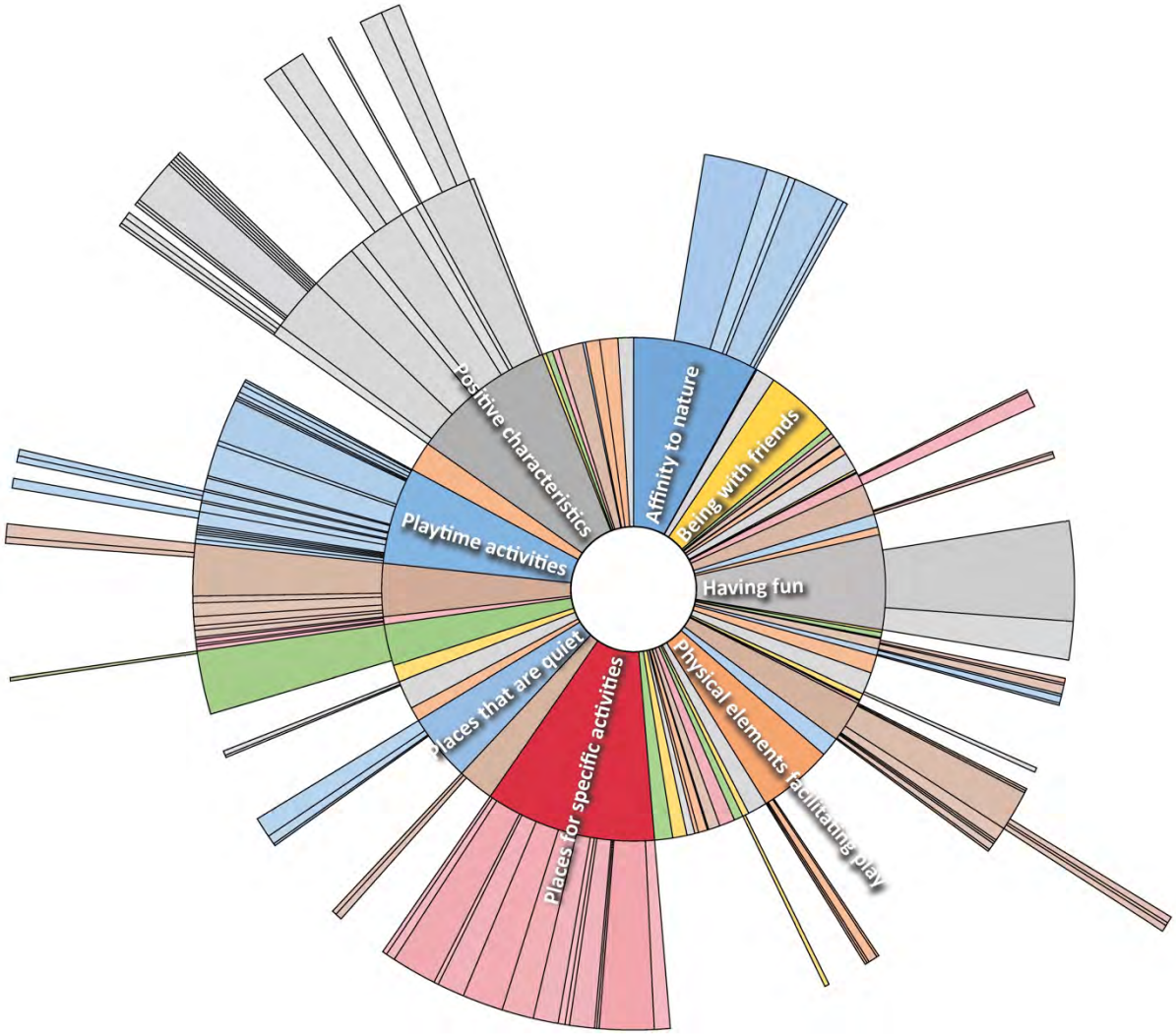


Top level codes relating to external environment

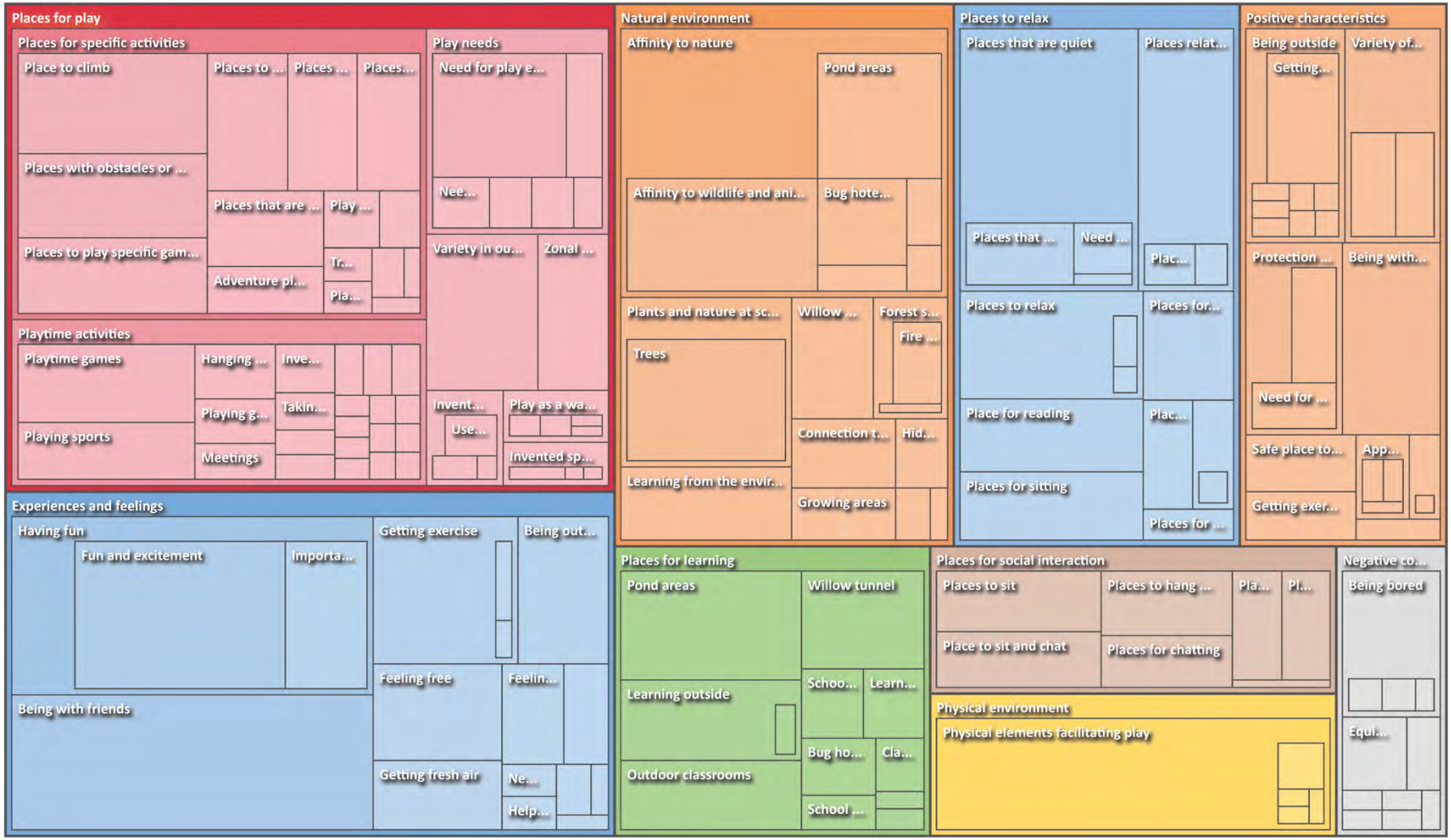
NVivo Sunburst Diagram: Radial coding chart indicating hierarchical levels of the coding data

- Innermost rings are the top level of the hierarchy (or major codes)
- Segments represent the sub-codes
- Size by items coded: Size of segments represent the amount of coding at each 'node'
- Colour by hierarchy: Variation in colour represents the hierarchy of the coding references

Appendix H: Chapter 9 coding diagram



Secondary codes relating to the external environment



NVivo Tree Map Diagram: A coding chart indicating hierarchical coding data as nested rectangles

- Size by items coded: Size of rectangles represent the amount of coding at each ‘node’
- Colour by hierarchy: Variation in colour represents the hierarchy of the coding references

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